ARITHMETIC FOR *Today*

4

BY

THOMAS J. DURELL

Assistant State Commissioner of Education
In charge of Elementary Schools
Trenton, New Jersey

ADALINE P. HAGAMAN

State Helping Teacher
Somerset County, New Jersey

JAMES H. SMITH

Director, Training School
Oshkosh State College
Oshkosh, Wisconsin

CHARLES E. MERRILL BOOKS

COLUMBUS 15, OHIO

SAN FRANCISCO 5, CALIF. • DALLAS 1, TEXAS • NEW YORK 36, N.Y.

Foreword to the Teacher

Arithmetic has an essential place in child development. Children need arithmetic for practical competence and to enrich their thinking and living. An understanding of number relationships contributes to a child's emotional security.

Arithmetic in the Fourth Grade Most children entering the fourth grade will have learned how to use the addition and subtraction facts in adding and subtracting numbers containing up to four and five figures. This year, through new experiences, they will recall and in some cases have to relearn some of these facts and skills with a more mature understanding of the number relationships.

They will also refresh their memory of the multiplication and division facts they have already had, learn the rest of the facts, and acquire skill in multiplying and dividing three and four-figure numbers. This is one of the major sequential learnings of the year.

Arithmetic Experiences Should Be Meaningful As they recall and extend their computational skills, the children should continually apply them in solving problems within their experiences. Problem solving of this kind enables children to maintain skills, makes the four processes more meaningful to them, and helps them use arithmetic more intelligently in their living.

During the year, children should have many experiences in using measures which they need in their daily activities. As they work with various units of measure (length, weight, liquid and dry measure, time, heat), they should be able to begin to generalize about the relationships of the units, such as the inch, foot, yard, and mile, and use these measures competently.

Children of this age are increasingly able to understand and use fractions. They find fractional and multiple parts of objects, measures, and other numbers. They use fractions to compare numbers; they recognize some fractional equivalents; and they begin to add and subtract fractions informally. Their acquaintance with fractions, however, is still foundational and preparatory for later organized work with this mathematical tool.

This Book Provides a Complete, Modern Program Children learn best and retain longest what they understand and use. This book provides this kind of functional, meaningful program. In it, arithmetic is taught in close connection with children's experiences at every step, so that children really understand what they are doing.

Many common experiences of children are built into the book, but no textbook can, of course, include all the number experiences which are peculiar to every locality. In the detailed Teachers' Manual which

A CHARLES E. MERRILL BOOK. Copyright, 1953, Wesleyan University. All rights reserved including the right to reproduce this book, or parts thereof, in any form.
Printed in the U. S. A.

has been prepared to accompany this book, concrete suggestions are given for taking advantage of experiences in the local environment.

A New Kind of Manual The manual guides you specifically in helping every child make effective use of each page of this text. For each page, the Guided Learning suggestions cover Step 1: preparation for using the text ("Before Using the Book"); Step 2: the actual use of the book ("Using the Book"); and Step 3: group and individual follow-up activities ("After Using the Book").

There are social as well as learning advantages in having children attack a new topic together. The thinking of one child stimulates the thinking of the rest. For this reason, the first two steps should be carried out with the entire group. The children can later work in smaller, flexible groups for the follow-up activities.

Providing for All Levels of Ability There is ample material in this book to meet the needs of fourth-grade children. The book is outstanding in the way it provides for *all* levels of arithmetic ability and interest. (1) For children who need additional practice, the manual provides more practice in Step 3. (2) For children who are able to explore arithmetic ideas further, the text includes 54 pages of specially planned "enrichment material" (pages 258-311). These pages at the back of the book are keyed by footnotes to appropriate pages throughout the text.

Arithmetic Learnings Are Interdependent The scope of the learnings for the year, and the principal topics, will be found in the index on pages 314-316. For convenience of reference, the topics are listed alphabetically. Learnings in arithmetic, however, are interdependent, and require an organized program. An understanding of arithmetic is achieved by definite sequential steps. Each step leads to the next. *For this reason, it is important that you follow the order of topics as presented in the book.*

All Children Should Enjoy Arithmetic If children are successful, they will enjoy arithmetic. Each topic in this book starts with easy work so that every child can achieve initial success, and thus gain confidence in arithmetic.

No child should fail arithmetic because of reading difficulties. The reading vocabulary in this book, therefore, is very simple, and new arithmetic words are carefully introduced. Any reading difficulties that may be met should be attacked like any other reading problem. Under teacher guidance, children should first read silently to find out what they are to do. They should then discuss what they have read, including in the discussion any unfamiliar words or ideas they have met.

Cumulative Recall and Diagnostic Testing Cumulative reviews have been built into the text to help children maintain learnings. In addition, four sets of diagnostic "Check Tests" are provided to help you and the children discover how much they have learned and to diagnose their needs.

Allen
Sue
Sam
Bill

Vacation Arithmetic

Did you use arithmetic during your vacation this summer? The four children in the picture did. Here are some of their problems. See whether they used addition or subtraction to work their problems.

Write the numbers 1 to 6 on your paper. After each number, write A if you add in that problem or S if you subtract. Then write the answer to the problem.

1. Allen used his new camera this summer. One day he took 4 pictures. The next day he took 3 pictures. How many pictures did he take both days?

2. Allen bought enough film for 16 pictures. One day he took 8 pictures. How many more pictures could he take?

3. Sue likes to cook. One day, 9 boys and 7 girls went on a picnic. Sue said she would take a cupcake for each person. How many cupcakes did Sue need?

4. Sam went on a fishing trip with his father. Each one caught 5 fish. How many fish did they catch together?

5. Bill played on a baseball team this summer. His team won 11 games and lost 7. How many more games did his team win than it lost?

6. In one game, Bill got 5 hits. In the next game, he got 7 hits. How many hits did he make in the two games?

Can You Use a Number Table?

	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	10
2	3	4	5	6	7	8	9	10	11
3	4	5	6	7	8	9	10	11	12
4	5	6	7	8	9	10	11	12	13
5	6	7	8	9	10	11	12	13	14
6	7	8	9	10	11	12	13	14	15
7	8	9	10	11	12	13	14	15	16
8	9	10	11	12	13	14	15	16	17
9	10	11	12	13	14	15	16	17	18

You can use this table to find the addition and subtraction facts. To get the sum of 8 and 3, find 8 at the top and 3 at the left and see where their column and row meet. This shows that $8 + 3 = 11$ and $3 + 8 = 11$. It also shows that $11 - 8 = 3$ and $11 - 3 = 8$.

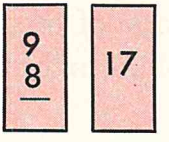
1. In the table, find the 16 that shows: $9 + 7 = 16$. On your paper, write the other addition fact and the two subtraction facts this shows.

2. Find the sum of $6 + 7$. Write the four facts it shows.

3. Write the four facts using 8, 5, and 13.

4. Write the four facts about 5, 6, and 11.

Finding Addition Facts

Copy and finish the addition facts below. If you are not sure of a fact, look up the sum in the table on page 2. On your paper, draw circles around any facts you had to look up. Make an addition card for each fact that gives you trouble. Write the example on one side of the card and the answer on the other, like this:  Use your cards to learn these facts.

	a	b	c	d	e	f	g	h	i
1.	6 7	7 2	4 7	9 4	6 5	7 6	2 8	8 7	4 2
2.	3 6	2 7	6 6	3 4	4 6	7 5	5 3	8 3	5 6
3.	4 5	7 7	3 7	6 2	3 8	8 8	2 6	2 4	4 9
4.	8 9	6 4	9 8	6 3	2 5	8 4	9 7	7 3	7 8
5.	5 4	6 9	3 9	7 4	5 8	2 9	7 9	9 3	5 9
6.	9 2	8 6	4 3	5 5	6 8	3 3	8 2	9 6	5 7
7.	4 4	9 5	5 2	4 8	9 9	2 3	3 5	8 5	9 1

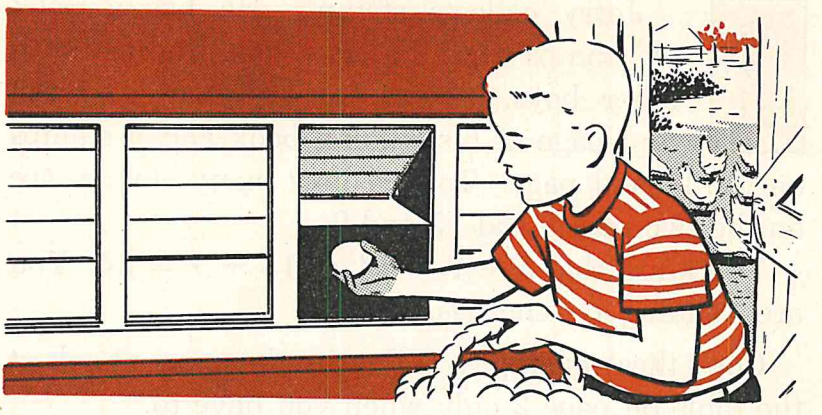
Finding Subtraction Facts

Look at the number table on page 2. To find 15 − 7, look at the row with 7 at the left, and find 15 in that row. At the top of the 15 column is 8, so 15 − 7 = 8. Find 14 − 8 in the same way. What is the remainder?

Copy and finish the subtraction facts below. If you have forgotten any of them, look them up in the table on page 2. Make subtraction cards for them and learn them.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
1.	8 3	9 4	10 1	8 5	16 9	12 8	8 6	13 9	17 9
2.	11 4	14 5	12 7	16 8	10 2	15 7	9 6	10 8	13 8
3.	11 9	15 9	11 8	16 7	8 2	7 4	10 4	12 9	13 7
4.	12 5	6 4	14 8	10 3	11 7	15 8	9 5	12 6	10 7
5.	9 2	11 5	13 6	12 4	14 7	11 3	14 9	11 2	7 5
6.	10 5	12 3	15 6	7 5	6 3	9 7	8 4	13 5	11 6
7.	13 4	7 3	10 9	10 6	18 9	7 2	17 8	14 6	9 3

Do You Remember How To Add?



1. Bob lives on a farm. He has some chickens of his own. One day he collected 13 white eggs and 10 brown eggs.

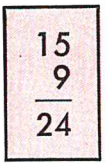
To find how many eggs he got that day, add 13 and 10. Start with the ones column: 3 + 0 = 3. Then add the tens. How many eggs did Bob get?

tens	ones
1	3
1	0
2	3

Copy these addition examples and write the answers.

	a	*b*	*c*	*d*	*e*	*f*	*g*
2.	17 12	15 22	14 33	22 47	81 16	36 12	39 20
3.	54 45	23 63	31 45	20 38	43 45	46 13	51 18
4.	20 10	35 63	12 45	14 70	46 21	40 55	72 12

Adding by Endings



Jerry collects stamps. He has a book of stamps that he uses for trading with other boys. There are 15 stamps on the first page of his trading book and 9 stamps on the second page. To find how many stamps are on the two pages, add 15 and 9.

You know that $5 + 9 = 14$, so $15 + 9 = 24$. You are "adding by endings."

Copy these examples and write the sums. Look at the table on page 2 only when you have to.

	a	*b*	*c*	*d*	e	*f*	*g*
1.	9 6	19 6	29 6	7 5	17 5	37 5	15 8
2.	35 8	24 4	28 4	57 6	41 9	28 7	47 3
3.	57 4	18 6	36 4	25 9	19 3	13 6	25 7
4.	38 3	46 5	28 9	39 7	36 6	24 9	49 5
5.	49 9	17 7	26 8	48 7	19 8	25 8	56 7
6.	37 9	53 9	38 8	15 6	59 2	36 9	24 7
7.	18 2	45 5	34 8	27 8	19 4	12 8	28 5

Adding Columns

1. Nora has three shelves of books in her room. There are 28 books on the top shelf, 31 books on the middle shelf, and only 9 books on the bottom shelf. To find how many books Nora has in her bookcase, you add the three numbers in columns.

28
31
9
68

Add the ones column first. Add **down.** Think *9, 18.* Write 8 in the ones column and carry 1 ten to the tens column. How many books has Nora?

Copy and add.

	a	*b*	*c*	*d*	*e*	*f*	*g*
2.	2	1	2	3	2	2	1
	3	6	6	7	1	6	5
	1	4	3	1	8	8	2
	3	5	4	4	3	9	7
3.	13	17	35	6	45	23	36
	12	9	15	28	4	19	14
	31	10	18	11	18	36	15
4.	8	15	46	9	17	5	20
	16	5	9	19	14	14	48
	32	19	37	39	8	56	27
5.	66	57	27	37	97	21	96
	24	19	15	8	72	78	44
	5	22	3	42	43	9	36

	a	*b*	*c*
6.	49 + 71 + 90	27 + 16 + 8	8 + 30 + 67
7.	56 + 9 + 29	96 + 64 + 77	9 + 8 + 18

Why Do You Add?

You add to find how many in all.

Read each problem to find *why* it asks you to add. In Problem 1, you add to find the total number of cookies of different kinds Sue made. In Problem 2, you add to find how much money Tom had after he earned some more money. In Problem 3, you find how many books Nora read altogether in two months.

These problems are *quickies*. See if you can solve them without using a pencil. Just tell the answers or write them on another paper.

1. Sue is making Halloween cookies. She has made 9 witches and 9 cats. How many cookies has she made?

2. Tom had 38¢. Then he earned 5¢ for running an errand. How many cents did Tom have then?

3. Nora read 12 books last month and 7 books this month. How many books has she read in both months together?

4. Ellen invited 11 girls and 9 boys to a party. How many children did she invite to the party?

5. Bob had 24 baby chicks. He bought 9 more baby chicks from his father. How many baby chicks did he have then?

6. Jill picked 25 tulips. Then she picked 8 more tulips. How many tulips did she pick in all?

7. Sam and Bob went fishing. Sam caught 9 fish and Bob caught 7. How many fish did both of them catch?

8. Jerry had 17 Cuban stamps in his stamp book. Then his father gave him 8 more Cuban stamps. How many did Jerry have then?

9. There are 13 green mints and 9 pink mints on the table. How many mints are there in all?

10. Allen took 32 pictures last month. This month he took 8 pictures. How many did he take in both months?

11. Joe has taken 14 trumpet lessons. He will take 7 more lessons this fall. How many lessons will he have taken in all?

12. Peggy spent 15¢ for some jacks and 9¢ for a rubber ball. How much did the jacks and ball cost?

13. This year, Sam has 8 big rabbits and 13 baby rabbits. How many rabbits in all does he have to take care of?

14. It takes Nancy 10 minutes to practice her scales and 15 minutes to practice her pieces. How many minutes a day must she practice?

15. Bill has 33 pictures of baseball stars. Today he found 7 more in a magazine. How many pictures does he have now?

16. Jean bought some drawing pencils for 49¢ and some drawing paper for 10¢. How much did she spend for both?

Why Do You Subtract?

You subtract to find how many are left.

You have some money, or some cookies, or some kittens. You want to spend part of the money, or eat a few of the cookies, or give away a few of the kittens. You subtract to find how much or how many you will have left.

You also subtract to find how many more or less.

You want to know how much taller, or heavier, or older one person is than another, or how much less or more one thing costs than another. In problems of this sort you subtract to compare numbers.

In some of the following quickies, you subtract to find what is left. In some, you subtract to compare numbers. Tell why you subtract in each problem, then give the answer.

1. Don picked 17 tomatoes from his garden. He sold 8 of them. How many tomatoes did he have left to sell?

2. I can buy a rubber ball for 13 cents or I can buy a whistle for 7 cents. How much cheaper is the whistle?

3. Mother had 14 pretty teacups. She dropped the tray on which she was carrying them, and 8 cups broke. How many did she have left?

4. Jill is 9 years old. Her sister Betty is 13 years old. How many years older is Betty than Jill?

5. Bill's baseball team played another team and won 11 to 5. By how many runs did Bill's team win?

6. Ann's mother has 13 dollars in her purse. If she spends 5 dollars for some new shoes for Ann, how much money will she have left?

7. Sam had 16 rabbits and sold 7 of them. How many rabbits did Sam have left?

8. From Don's farm, there are two ways to drive to town. By one road it is 14 miles to town. By the other it is only 9 miles. How much closer is it to town by the shorter road?

9. In our class play there will be 11 Pilgrims and 6 Indians. How many more Pilgrims' costumes than Indians' costumes must we get?

10. Ann and Jean hunted four-leaf clovers. Ann found 12 and Jean found 5. How many fewer did Jean find than Ann?

11. Sue brought a dozen cookies to school. She gave away 9 of them to other children. How many did she have left for herself?

12. How much change from a dime should Sam get if he buys a popsicle for 5 cents?

13. How much change from a dime should Ann get back if she buys a 7-cent paper doll?

14. Bob had 11 eggs and his mother bought 8 of them. How many eggs does Bob have left to sell?

More Uses for Subtraction

You subtract to find how many are still needed.

Perhaps you want to buy something. You have some money, but not quite enough. You subtract the money you have from the price of the thing, to find how much you still need in order to buy it.

You subtract to find the missing number.

On Monday, you had 15 cents in your pocket. On Tuesday, you have only a dime. By subtracting, you find that you must have spent 5 cents.

In some of the following problems, you subtract to find how much is still needed. In some, you subtract to find the missing number. Tell why you subtract in each problem, then give the answer.

1. Bob has an order for 12 eggs. He has only 6 eggs on hand. How many more eggs does Bob need?

2. Allen took a roll of 8 pictures to the camera store. He got back 5 good pictures. How many of Allen's pictures were not good?

3. There were 11 eggs in the refrigerator this morning. Mother made a cake. Now there are only 7 eggs. How many eggs did Mother use in the cake?

4. Ann wants to buy a paper doll for 15¢. She has only 6¢ in her pocketbook. How many more pennies does she need?

5. Jean promised to make 16 place cards for Ellen's party. She has finished 8 of the cards. How many more must she make?

6. We had 10 muffins for breakfast. Two were left after breakfast. How many muffins had we eaten?

7. Milk and a sandwich together cost 18¢. I have 9 cents. How much more money do I need?

8. Bill threw 13 snowballs at a tree. He counted where 8 of them had hit the tree. How many snowballs must have missed?

9. Joe practices his trumpet 15 minutes every morning. This morning he has already practiced 8 minutes. How many more minutes does he need to practice?

10. Jean had 15 cents when she went to the store. She had 9 cents left when she came out. How many cents had she spent?

11. Ellen put away 11 fancy buttons for her collection. The next time she looked, she could find only 9 of them. How many buttons were missing?

12. Ann wants 12 pictures for a calendar she is making. She has found 7 pictures. How many more must she find?

13. If I want a 20-cent doll and have a dime, how much more money do I need?

14. Sue put 17 cookies on a plate. When she came back, she counted only 9. How many cookies did Sue think Bob had taken?

Deciding Why To Subtract

Read each of these subtraction problems carefully and decide why you subtract. Then work the problems on another paper. Remember, in subtracting two-figure numbers, start in the ones column.

1. Jill has 75 cents. If she spends 25 cents for some flower seeds, how much money will she have left?

2. Jerry has 20 cents. How much more does he need to buy a packet of stamps costing 48 cents?

3. Peggy wants to buy a rubber ball. A large ball costs 25 cents. A small ball costs 12 cents. How much more does the larger ball cost?

4. Ellen had 65 cents before she bought some candy for her party. After she bought the candy she had 21 cents. How much must she have spent for candy?

5. Tom and Dave are playing with a set of 96 blocks. If they use 44 of them to build a garage, how many blocks will they have for a road?

6. Judy's bead necklace had 39 beads in it. After it broke, Judy could find only 34 beads. How many beads were lost?

7. Dick has two boards. One board is 86 inches long. The other board is 71 inches long. How much shorter is the second board?

8. The boys are arranging 68 chairs for the class play. They have already carried in 53 chairs. How many more must they bring?

Finding the Missing Number

1. In the addition example $6 + ? = 15$, the missing number is 9. In $3 + ? = 10$, what number is missing?

2. What number must you add to 7 to make 12?

On another paper, write the numbers that have been left out in these addition examples.

	a	*b*	*c*
3.	$5 + ? = 9$	$6 + ? = 8$	$1 + ? = 10$
4.	$3 + ? = 12$	$8 + ? = 15$	$4 + ? = 13$
5.	$? + 6 = 12$	$? + 9 = 14$	$? + 7 = 16$
6.	$9 + ? = 18$	$? + 8 = 17$	$? + 6 = 15$

On your paper, write the missing numbers in these addition examples.

	a	*b*	*c*	*d*	e	*f*
7.	3	9	8	?	?	?
	?	?	?	7	2	1
	7	12	16	12	11	10
8.	7	?	8	?	?	9
	?	9	?	6	8	?
	13	17	12	14	15	13

	a	*b*	*c*
9.	$10 = 5 + ?$	$10 = 2 + ?$	$10 = 6 + ?$
10.	$11 = 8 + ?$	$11 = 5 + ?$	$12 = 4 + ?$
11.	$16 = 7 + ?$	$14 = 9 + ?$	$13 = 6 + ?$

12. What number added to 20 makes 24?

13. What number added to 15 makes 20?

14. What number added to 13 makes 28?

Do You Add or Subtract?

Number your paper 1 to 20. After each number, write A or S to show whether you add or subtract to work that problem. Then write the answer. See how many of the problems you can work as quickies.

1. Peggy wants to buy a jump rope for 24 cents and some jacks for 13 cents. How much money will she need?

2. Peggy decides not to buy both the jump rope and the jacks. How much less money will she spend if she buys the jacks instead of the jump rope?

3. Jean has 10 colored pencils at home and 4 at school. How many colored pencils has she altogether?

4. Don had 11 cabbages big enough to sell. One day he sold 4 of them. How many did he have left?

5. Bob and Sam caught 5 sunfish, 2 pike, and 6 perch. How many fish did the boys catch?

6. Allen has pasted 48 pictures in his snapshot book. Now he has 6 more pictures to paste in. How many will he have then?

7. An uncle sent Jerry 25 stamps for his collection. Jerry gave Tom 5 of them. How many did he have left?

8. Linda bought a pencil for 4 cents. She gave the clerk a dime. How much change did she get?

9. One day Don picked 5 boxes of strawberries. The next day he picked 9 boxes. How many more boxes did he pick the second day?

10. Bill has 7 yellow marbles, 5 green marbles, and 6 red marbles. How many marbles does he have?

11. Jean spent 75¢ for some paints and 9¢ for a brush. How much did she spend in all?

12. Jim had 29¢ in his pocket. Then he spent 17¢ for some popcorn. How much money did he have left?

13. There were 15 beads on my bead bracelet. It broke, and now I can find only 7 beads. How many did I lose?

14. Twenty-five parents are coming to our play. We have only 13 chairs. How many more chairs must we get?

15. Allen took 58 pictures this summer, and Bob took 35. How many more pictures did Allen take than Bob?

16. Allen paid 72¢ to get some films developed, and bought a camera magazine for 25¢. How much did he spend?

17. Jerry had 25 Cuban stamps in his collection. He got 8 more for his birthday. How many Cuban stamps did he have then?

18. Sally went into the store with 67¢ and came out with 45¢. How much money had she spent?

19. Jill had 8¢. Then she got 5¢ for running an errand and 5¢ for helping to dust. How much money did she have then?

20. Tom collects shells. He has 13 large shells and 35 small shells. How many has he in all?

Do You Understand Thousands?

1. The number 375 means 3 hundreds 7 tens 5 ones. Tell what each figure in the number 986 means.

2. What does each figure in the number 402 mean? Read this number.

3. What does each figure in 730 mean? Read this number.

4. What does each figure in 600 mean? Read it.

5. What number means 4 hundreds 1 ten 7 ones?

800	900	1000	1100	1200	1300	1400	1500	1600

6. See if you can read the numbers in the table above. You are counting by 100's.

Ten hundreds (1000) make **one thousand.**

1,000	2,000	3,000	4,000	5,000	6,000	7,000

7. Can you read the numbers in this table? You are counting by thousands.

1,000	1,001	1,002	1,003	1,004	1,005	1,006

8. Read the numbers above. You are counting by 1's.

1,000	1,010	1,020	1,030	1,040	1,050	1,060
1,070	1,080	1,090	1,100	1,110	1,120	1,130
1,140	1,150	1,160	1,170	1,180	1,190	1,200

9. Read the numbers above. You are counting by 10's.

10. The number 1,025 means 1 thousand 0 hundreds 2 tens 5 ones. It is read, "One thousand twenty-five." On your paper, write the number that means 1 thousand 0 hundreds 4 tens 2 ones. Read it.

11. The number 3,060 is read, "Three thousand sixty." Tell what each figure means. On your paper write the number that is read, "Two thousand ten."

On your paper, write these numbers in figures.

12. Two thousand seven hundred ninety-six.

13. Nine thousand one hundred eighty.

14. One thousand three hundred sixteen.

15. Four thousand seventy-five.

16. Six thousand twenty.

17. Eight thousand three hundred.

18. Three thousand twelve.

19. Read 7,018. Tell what each figure means.

On your paper, write the larger number in each pair of numbers below.

	a	*b*
20.	987 or 1,007	1,211 or 1,189
21.	1,886 or 1,907	3,412 or 3,374
22.	5,206 or 3,849	8,896 or 9,000

In larger numbers, a comma is often put between the thousands and the hundreds place. The comma makes the number easier to read.

The comma is *not* put in dates. The year 1955 is read, "Nineteen fifty-five."

Pages 258 and 259 provide enrichment material which can be used after this page.

Can You Use Zeros?

Zeros may give you trouble when adding or subtracting larger numbers. Zero means none or nothing.

Adding zero to a number does not change the number.

$0 + 7 = 7 \quad 8 + 0 = 8 \quad 0 + 0 = 0 \quad 6 + 20 = 26$

Subtracting zero from a number does not change the number.

$8 - 0 = 8 \quad 1 - 0 = 1 \quad 0 - 0 = 0 \quad 16 - 10 = 6$

When you subtract a number from the *same* number, the remainder is zero.

$8 - 8 = 0 \qquad 15 - 5 = 10 \qquad 32 - 12 = 20$

Copy and add.

	a	*b*	*c*	*d*	*e*	*f*
1.	10 4	7 20	20 30	40 53	25 60	50 9
2.	24 30 12	20 18 30	22 27 20	30 40 10	17 20 40	11 50 4

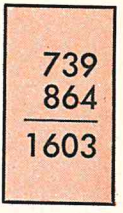
Copy and subtract.

3.	54 24	62 30	70 40	38 32	63 50	86 80

Copy each example in columns and work.

	a	*b*	*c*
4.	$30 + 9$	$25 + 60$	$12 + 30 + 4$
5.	$60 - 10$	$73 - 30$	$57 - 50$

Addition With Carrying



1. Do you remember how to carry in addition? In the example in the box, start adding in the ones place at the right. $9 + 4 = 13$. $13 = 3$ ones and 1 ten. Write the 3 in the ones column under the 4, and carry the ten to the tens place. Think *4, 10.* But 10 tens $= 1$ hundred. Write 0 under the 6 in the tens column, and carry 1 hundred to the hundreds column. Read the sum.

Copy and add.

	a	*b*	*c*	*d*	e	*f*
2.	36 28	18 32	28 24	79 64	46 59	45 68
3.	49 35	47 96	83 87	19 77	19 89	85 67
4.	237 147	634 239	306 578	276 405	309 402	115 327
5.	185 374	360 479	593 116	433 895	647 462	476 240
6.	676 349	1704 788	2618 593	1348 567	1069 481	2578 638
7.	21 12 78	51 49 76	44 27 35	39 37 53	68 9 59	15 55 90

	a	*b*	*c*
8.	$88 + 665$	$1057 + 785$	$47 + 9 + 15$

Adding and Checking Columns

37
29
43
51
160

1. Bob kept a record of the eggs his hens laid. In four weeks, they laid 37, 29, 43, and 51 eggs. To find how many eggs Bob got in all, add the four numbers.

Add the ones column first. Add *down*. Think *16, 19, 20*. 20 = 2 tens and 0 ones. Write the 0 in the ones column. Carry the two tens to the tens column. Now add the tens column. How many eggs did Bob get?

To check your work, add *up*. For the ones column, think *4, 13, 20*. Now add the tens column up. Start thinking, 7. Are the two sums the same?

Always add down. Check your work by adding up.

Copy, add, and check.

2.

	a	b	c	d	e	f	g
	9	6	4	3	4	5	9
	7	2	4	3	7	6	8
	4	5	7	2	1	2	5
	9	7	6	9	8	4	7

Copy, add, and check.

	a	b	c	d	e	f	g
3.	3	2	2	4	2	9	6
	8	5	4	9	6	9	6
	9	8	7	4	4	6	3
	5	5	9	6	9	5	3
	7	7	8	5	8	4	2

	a	b	c	d	e	f
4.	23	76	85	98	90	69
	46	58	47	31	90	90
	31	39	79	69	78	9
	78	20	76	26	56	35
5.	36	47	54	56	27	31
	47	84	68	9	46	35
	20	96	71	28	51	74
	18	25	32	17	68	62
6.	469	419	837	318	228	443
	308	946	807	94	918	683
	672	233	130	624	697	844
	593	669	346	79	167	90
7.	256	669	400	369	56	79
	100	705	523	82	808	74
	265	332	601	100	280	345
	194	819	152	58	8	111
8.	39	58	577	385	969	54
	205	686	374	96	723	408
	89	967	936	941	787	283
	946	209	927	578	436	953

Did you remember to check all your answers?

Subtracting With Borrowing

\$5.85
4.98
\$ .87

1. Bill saw a fielder's glove at a special sale. The regular price of the glove was \$5.85. The sale price was \$4.98. Bill wanted to know how much he would save by buying it at the sale.

Start at the cents place. Since you cannot take 8 cents from 5 cents, you must "borrow" a dime from the dimes column and change it into cents.

$10¢ + 5¢ = 15¢.$ $15¢ - 8¢ = 7¢.$

You have only 7 dimes left. Since you cannot take 9 dimes from 7 dimes, you must change 1 dollar to 10 dimes. 10 dimes + 7 dimes = 17 dimes. 17 dimes − 9 dimes = 8 dimes.

Four dollars from 4 dollars leaves how many dollars?

How much would Bill save by buying the glove at the special sale price?

Copy and subtract.

	a	*b*	*c*	*d*	*e*	*f*
2.	82 37	71 18	74 27	95 39	53 46	82 33
3.	151 86	823 555	497 348	923 624	436 98	361 14
4.	\$8.56 1.59	\$3.66 3.47	\$1.29 .72	\$9.57 2.64	\$3.35 2.67	\$7.44 4.79

Borrowing With Zeros

1. Uncle Henry sent Sue four dollars for her birthday. Sue wants to buy a cook book that costs $1.87. To find how much of the $4.00 Sue will have left, you subtract $1.87 from $4.00.

$$\begin{array}{r} \$4.00 \\ 1.87 \\ \hline \$2.13 \end{array}$$

Since you cannot subtract 7 cents from 0 cents, you must borrow. But you cannot borrow from the dimes column because there are no dimes. You must go clear to the dollars column, change a dollar to 10 dimes, and then borrow one of the dimes to change into cents. So your subtractions are: 10 cents $-$ 7 cents $=$ 3 cents. 9 dimes $-$ 8 dimes $=$ 1 dime. $\$3 - \$1 = \$2$.

In the dimes column, why do you subtract from 9 instead of from 10? In the dollars column, why do you subtract from 3?

How much money will Sue have left?

Copy and subtract.

	a	*b*	*c*	*d*	*e*	*f*
2.	630 546	502 165	660 533	800 241	903 108	290 152
3.	811 753	510 209	805 470	500 358	708 643	800 271
4.	\$8.16 6.86	\$9.18 7.89	\$8.04 7.96	\$10.00 5.34	\$12.00 9.07	\$14.03 12.29

Checking Subtraction

1. Don picked 42 ripe tomatoes from his garden. He sold Mrs. Smith, a neighbor, two dozen of them.

After Mrs. Smith had gone, Don's father said, "Are you sure you gave Mrs. Smith two dozen tomatoes, Don? How many should you have left?"

Don counted the number of tomatoes he had left. There were 18 tomatoes. Then he added this number to two dozen, or 24. Check Don's work, below. Had he given Mrs. Smith the right number of tomatoes?

Subtract	*Check*
42 tomatoes at first	24 tomatoes sold
24 tomatoes sold	18 tomatoes left
18 tomatoes left	42 tomatoes at first

To check subtraction, add the answer and the number subtracted. You should get the number you subtracted from.

Copy these examples and subtract. Check each answer by adding it to the number you subtracted.

	a	*b*	*c*	*d*	e	*f*
2.	58 35	91 22	82 35	60 13	92 87	70 56
3.	103 75	114 28	168 84	157 87	107 95	117 48

A Short Way To Check Subtraction

1. You can check subtraction a shorter way, without copying the numbers.

In the box, 193 is subtracted from 613. To check the answer, cover the 613 and add 420 to 193. Is your sum 613?

613
193
420

Copy these examples and subtract. Check each answer the short way.

	a	*b*	*c*	*d*	e
2.	385 127	694 36	405 19	529 269	306 37
3.	961 224	841 467	904 159	702 269	271 143
4.	384 265	217 79	503 187	1076 139	1291 179
5.	1561 768	1328 126	1040 548	1583 419	1787 697
6.	906 450	1003 288	1105 635	1141 405	956 349
7.	2012 1704	692 108	1052 620	1531 336	1707 1686
8.	1239 570	1535 638	1020 509	1802 1797	1040 132
9.	1600 634	1102 753	1273 938	1008 695	1904 1299

Thinking About Coins

1. What one coin is worth as much as all three coins above?

2. What coin is worth as much as these five coins?

3. How much are these four coins worth?

4. What coin is worth half as much as a dime?

5. What coin is worth twice as much as a quarter?

6. What two coins are worth 15 cents?

7. What two coins are worth 20 cents?

8. What two coins are worth 35 cents?

9. What three coins are worth 40 cents?

10. What two coins are worth 60 cents?

11. What two coins are worth 75 cents?

12. What coin is worth 5 pennies and a nickel?

Adding Money

Jill lives on a farm. In summer, she sometimes helps her mother sell flowers from their farm at a road stand. Before she leaves the stand, Jill counts the coins she has taken in.

Here is part of a table Jill made to help her count.

	3	4	5	6	7
Nickels	\$ .15	\$ .20	\$ .25	\$ .30	\$ .35
Dimes	\$ .30	\$ .40	\$ .50	\$ .60	\$ .70
Quarters	\$ .75	\$1.00	\$1.25	\$1.50	\$1.75
Half dollars	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50

1. One day, Jill took in 5 nickels, 7 dimes, 6 quarters, and 3 half-dollars. Use the table to find how much money she took in that day. Write the amounts in columns and add.

2. Another day, Jill took in 6 nickels, 5 dimes, 7 quarters, and 4 half dollars. How much did she take in that day?

Making Change

$$\begin{array}{r} \$1.00 \\ .56 \\ \hline \$\ .44 \end{array}$$

1. Allen bought some films for his camera. The films cost 56¢ and he gave the clerk a dollar bill. The clerk counted the change he handed to Allen: 56¢ for the films, (4 pennies) 60¢, (1 nickel) 65¢, (1 dime) 75¢, (1 quarter) $1.00. Allen subtracted 56¢ from $1.00 to be sure the change was correct. Was it?

In each of the following problems, think of the smallest number of coins that could be given in change. Subtract to find the total amount of change.

2. Bill bought some apples for 18 cents. He gave the clerk a half dollar. What coins did Bill get in change? How much change did he get?

3. I spent 6 cents at the store and handed the clerk 25 cents. What coins did he give me in change? How much change did I get?

For the problems below, tell what coins are given in change and then find the total change.

	Money Given the Clerk	Money Spent
4.	$1.00	77 cents
5.	75 cents	54 cents
6.	$1.00	69 cents
7.	A dime and a quarter	28 cents
8.	A half dollar and a quarter	61 cents
9.	One dollar	55 cents
10.	A half dollar	32 cents

Copying in Columns

Can you copy numbers in straight columns so you can add or subtract them correctly? When you copy money numbers, be sure all the points are in one column. How many times do you write the dollar sign in each example?

Copy and add.

	a	*b*
1.	\$1.56 + \$.09 + \$.75	\$3.00 + \$1.95 + \$.83
2.	\$.94 + \$6.06 + \$.49	\$4.25 + \$4.67 + \$5.18
3.	66¢ + 86¢ + 7¢ + 25¢	50¢ + 9¢ + 38¢ + 72¢
4.	\$3.49 + 95¢ + \$2	\$1.05 + 86¢ + \$3.30

Copy and subtract.

	a	*b*	*c*
5.	132 − 76	100 − 9	73 − 8
6.	604 − 519	321 − 86	420 − 79
7.	\$1.25 − \$.75	\$1.00 − \$.68	\$2.00 − \$.42
8.	\$3.00 − \$2.16	\$4.50 − \$1.72	\$10.00 − \$6.89
9.	\$2 − 67¢	\$5 − \$4.25	1943 − 886

Thinking About Numbers

1. How much larger is 100 than 85?
2. What number must be added to 18 to make 25?
3. What number is 20 more than 115?
4. What number comes just before 1000?
5. What number comes just after 1029?

Pages 260 and 261 provide enrichment material which can be used after this page.

Asking Problem Questions

These problems are not finished. They do not have any questions. Finish each problem by making up a question that will make it an addition or subtraction problem. Write your questions and your answers on another paper.

1. There were 19 boys and 23 girls on our school bus when it reached the school.

2. Jean wants a scarf that costs 90 cents. She has only 75 cents.

3. Sam and Bob were looking for hickory nuts. Sam found 48 and Bob found 39.

4. On the way home, Sam ate some of his 48 hickory nuts. When he got home, he found he had only 35 hickory nuts left.

5. Jim bought a puzzle costing 35 cents. He gave the clerk a half dollar.

6. Sue made 32 brown cookies and 18 white cookies.

7. Tom earned 50 cents for cutting the lawn and 25 cents for helping wash the car.

8. There were 40 children in a school bus when it left school. At the first stop 7 children got off.

9. Bill has 27 marbles in his pocket and 36 at home.

10. When Sally went into the store, she had a dollar. When she left the store she had 23 cents.

11. Peggy wants to buy a jump rope costing 18 cents and a game costing 60 cents.

Making Up Problems

Can you make up addition and subtraction problems? Just read each problem aloud, putting in numbers where they are missing. If you use easy numbers, you or your classmates can give the answer when you read the problem.

1. Sue made ? pieces of candy. She and Bob ate ? pieces. How many pieces were left?

2. There will be ? boys and ? girls at Ellen's party. How many place cards will she need?

3. Bob weighs ? pounds and Sue weighs ? pounds. How much heavier is Bob than Sue?

4. We took ? egg sandwiches and ? cheese sandwiches to the picnic. How many sandwiches did we take?

5. Peggy bought jacks for ? cents. She gave the clerk ? cents. How much change did she get?

6. Bill shot ? arrows at a target. ? of them hit the target. How many arrows missed?

7. Jill has ? purple pansies and ? yellow pansies. How many pansies does she have in all?

8. Jean bought a box of crayons for ?¢ and some paper for ?¢. How much money did she spend?

9. Bill and Dave bought ? marbles. If Bill got ? of the marbles, how many did Dave get?

10. Jean is ? inches tall. Ann is ? inches tall. How many inches taller than Ann is Jean?

Pages 262 and 263 provide enrichment material which can be used after this page.

Checking Addition of Money

$1.79
.68
2.06
.96
$5.49

1. Sally took her mother's grocery list to the store. The four things she bought cost $1.79, 68¢, $2.06, and 96¢. To find her total purchases, add. Add the cents column first. Then add the dimes column. Add the dollars column last of all. How much money did Sally spend?

You check addition of dollars and cents just as you check other column addition. Add each column *up*. Do you get the same sum?

Copy, add, and check.

	a	*b*	*c*	*d*	*e*
2.	$ .63	$ .54	$ .70	$ .75	$ .46
	.86	.72	.88	.69	1.04
	.65	.57	.25	.56	.80
	.30	.39	.42	.25	.78
3.	$2.35	$8.88	$1.66	$5.87	$ .99
	9.47	7.62	.98	9.72	3.98
	4.94	6.09	5.47	3.50	1.45
	5.36	1.54	1.00	3.01	.80
4.	$ .54	$4.43	$ .79	$9.08	$5.06
	.94	9.88	3.72	7.60	7.09
	.36	5.09	1.04	.96	5.62
	.73	2.93	.71	3.21	2.30
	.20	8.70	6.18	.67	4.18

5. $4.50 + $6.25 + $7.75 + $ .88 + $4.79

6. $9.77 + $6.25 + $1.00 + $ .96 + $6.12

7. $8.06 + $ .99 + $3.68 + $2.33 + $ .75

Checking Subtraction of Money

1. Allen bought a camera for $4.86. He gave the clerk a ten-dollar bill. How much change did Allen get?

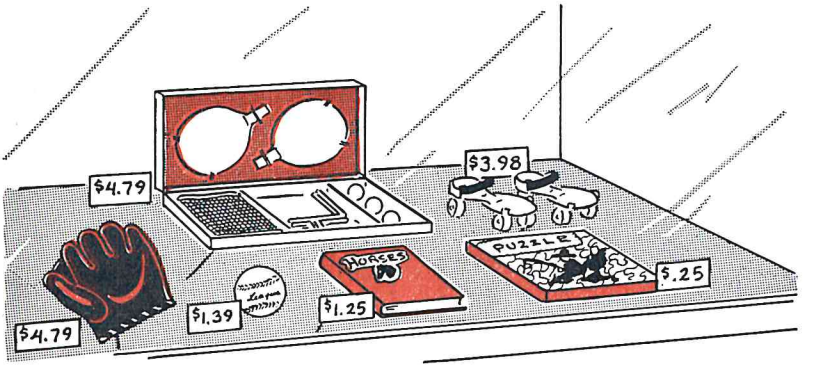
$10.00
4.86
$ 5.14

You check this subtraction of money numbers as you would with other numbers. Cover the $10.00 and add $4.86 and $5.14. Is the sum $10.00?

Copy, subtract, and check.

	a	*b*	*c*	*d*	*e*
2.	$1.25 .76	$1.54 .96	$1.84 .75	$1.00 .41	$1.07 .24
3.	$2.70 2.19	$1.83 1.24	$8.47 5.58	$9.00 3.92	$8.82 4.09
4.	$7.50 5.83	$6.05 2.09	$2.00 .78	$7.28 4.55	$4.43 .69
5.	$9.00 6.13	$7.38 3.89	$7.25 6.00	$10.54 6.07	$12.41 2.53
6.	$11.51 5.28	$8.06 7.68	$13.25 6.47	$6.00 1.59	$2.15 .48
7.	$13.00 7.75	$16.47 3.89	$18.36 3.47	$10.00 8.35	$7.23 6.97
8.	$14.26 7.68	$15.18 9.68	$15.44 4.95	$10.00 8.28	$20.00 14.75
9.	$15.25 5.75	$11.03 6.06	$12.46 5.37	$20.85 12.87	$24.00 15.13

Buying Things You Want



Baseball	$1.39	Croquet set	$4.95
Baseball glove	4.79	Film	.56
Basketball set	3.49	Paintbox	.89
Bicycle	39.95	Picture puzzle	.25
Book	1.25	Roller skates	3.98
Boxing gloves	6.45	Stamp album	1.87
Camera	5.13	Table tennis set	4.79

Look at the price list above to find the prices to use in these problems. Some of the problems are addition problems. Some are subtraction problems. Decide which process you will use before you work a problem.

1. Ann wants a pair of roller skates and a book. How much money will she need?

2. Jim bought 2 picture puzzles. How much did he pay for them?

3. Don's father bought Don some boxing gloves. He gave the clerk a ten-dollar bill. How much change did he get?

4. Bob is earning money for a new bicycle. He has saved $27.50. How much money does he still need?

5. Peggy wants either a camera or a table tennis set for her birthday. How much less would the table tennis set cost?

6. Jean bought a box of paints and two rolls of film. How much money did she spend?

7. Bill is saving for a baseball and a baseball glove. How much money must he save to buy both the ball and the glove?

8. How much more does a basketball set cost than a stamp album?

9. Jill wants a croquet set. She has saved $3.59. How much more does she need?

10. Find the total cost of a box of paints, a picture puzzle, a camera, and a roll of film.

11. Make up and work an addition problem about any two things you would like to buy in the list on page 36.

12. Make up a problem about how much more one thing on the list costs than another thing.

13. Make a subtraction problem about how much more money you need to buy something on the list.

14. Make a problem about two things *not* on the list which you want to buy.

When Do You Add or Subtract?

Read each of these problem situations and decide whether you would have to add or subtract to find the answer. On another paper, write A or S after the number of each problem. You don't have to work any problems.

1. You know the weights of two boys. Do you add or subtract to find how much heavier one boy is than the other?

2. You know how many boys and how many girls are enrolled at your school. How do you find how many children go to your school?

3. You know how tall you were last year and how tall you are now. How do you find how many inches you have grown since last year?

4. You know how many marbles Bill has and how many marbles Dave has. How do you find how many more marbles Bill has than Dave?

5. You know the prices of two different things you bought. How do you find how much you spent in all?

6. You know the cost of something you want to buy. You know how much money you have saved toward buying it. How do you find how much more money you need to buy it?

7. You know how many apples there were at first and how many there are now. How do you find how many have been eaten?

8. You know how many books a boy had before his birthday and how many books he got for his birthday. How do you find how many books he had after his birthday?

9. You know how long a piece of ribbon was at first and how much was cut off. How do you find how much ribbon was left?

10. You know how many minutes Nancy practiced the piano yesterday and how many minutes she practiced today. How do you find how long she practiced both days?

11. You know how much money you paid for a baseball and how much money you gave the clerk. How do you find how much change you should get?

12. You know how many oranges and how many bananas are in a fruit bowl. How do you find how many pieces of fruit are in the bowl?

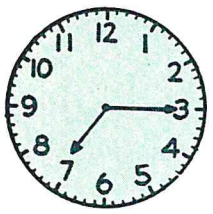
13. You know how many pieces of candy you had and how many you gave away. How do you find how many pieces you have left, without counting?

14. You know how many problems you have to work and how many you have finished. How do you find how many problems you still need to do?

15. You know the lengths of two boards in inches. How do you find their total length?

16. You know how old you are and how old your father is. How do you find how much older your father is than you?

Can You Tell Time?



1. In the clock face at the left, to what number is the minute hand pointing?

2. How many minutes did it take the minute hand to go from the 12 to the 3 on the clock?

3. How long does it take the minute hand to go around the whole clock face?

4. How many minutes are there in an hour?

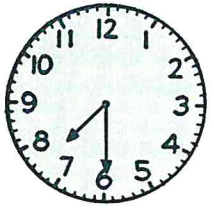
5. How many minutes are in a half hour?

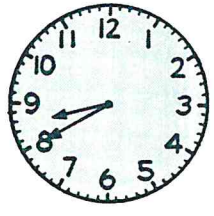
6. To what number does the minute hand point when it is half past the hour? Where does it point at quarter past the hour? At quarter of the hour?

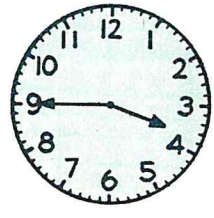
7. What time does the clock face above show?

8. How many minutes past the hour is it when the minute hand points to 1? To 2? To 4? To 5?

9. How many minutes before the hour is it when the minute hand points to 11? To 10? To 8? To 7?

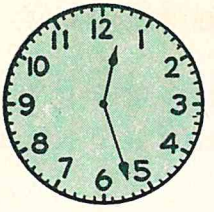
I 

II 

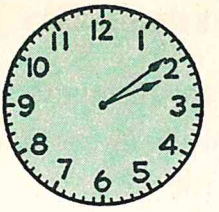
III 

10. These three clocks show when Bill usually gets up, when he starts for school, and when he gets home. Tell what time each clock shows.

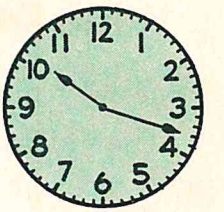
I



II



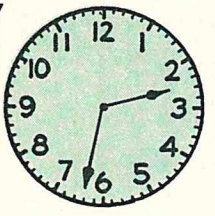
III



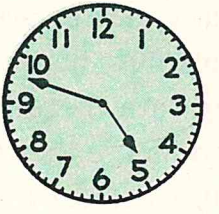
11. Clock I shows 27 minutes after 12, or 12:27. How many minutes after 2 does Clock II show? Tell this in two ways.

12. How many minutes past 10 does Clock III show?

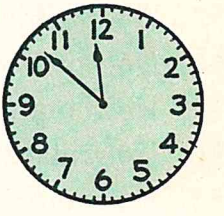
IV



V



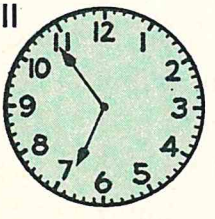
VI



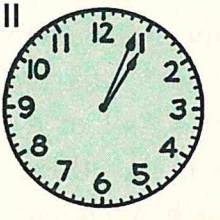
13. Clock IV shows 28 minutes of 3, or 2:32. Tell in two ways what time Clock V shows.

14. What time does Clock VI show?

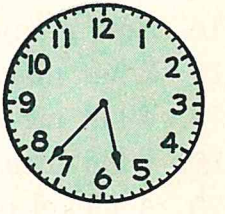
VII



VIII



IX



15. What time does Clock VII show? Clock VIII? Clock IX?

16. Allen is meeting his father's train. The train is due at 5:41. How many minutes before 6 is this?

What Measures Do You Know?

See how much you remember about measures.

1. How many feet are there in a yard? How many inches are there in a yard?

2. One foot equals how many inches?

3. How many cents is a dollar worth?

4. How many oranges are a dozen oranges?

5. How many pints make a quart?

6. How many quarts are there in a gallon?

7. About how many glasses are there in a pint?

8. One hour equals how many minutes?

9. How many days are there in a week?

10. How many months are there in a year?

11. How many ounces make a pound?

12. What part of an hour is 15 minutes?

13. Six lemons are what part of a dozen lemons?

14. One fourth of a foot is how many inches?

15. Three months are what part of a year?

16. How many ounces are there in half a pound?

17. What measure is a quarter of a gallon?

18. What measure is half of a quart?

19. What measure is one third of a yard?

20. A nickel is worth what part of a dime?

21. How many dimes make a half dollar?

22. A quarter is worth what part of a half dollar?

23. Which is worth more, 3 dimes or a quarter and a dime?

Quickies With Measures

To solve these quickies, you need to know measure facts. See how many you can do in your head. Just tell the answers or write them on your paper.

1. Mary's mother bought a dozen oranges. She then used 5 of them to make orange juice. How many oranges were left?

2. Tom has a quarter and a dime to put into his bank. How much money is this?

3. Sally bought a yard of ribbon. She has 5 inches left. How many inches of ribbon did Sally use?

4. Nancy bought some piano music for 60 cents. She gave the clerk a quarter and a half dollar. How much change did she get? What two coins might she get?

5. Tom's father said, "I am just 2 yards tall. How many feet is this?"

6. Dick had two boards. One of them was a foot long. The other was an inch longer than the first one. How many inches long was the second board?

7. Sue bought 12 ounces of cheese. How many ounces less than a pound was this?

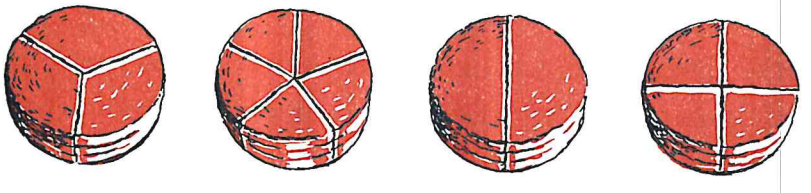
8. Our Christmas vacation will be one week and 6 days long. How many days' vacation will we have?

9. Bob used a gallon and 3 quarts of paint on his chicken house. How many quarts of paint did he use?

Pages 264 and 265 provide enrichment material which can be used after this page.

What Is a Fraction?

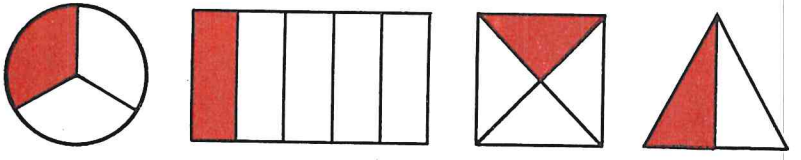
When you divide a candy bar, or a cookie, or an apple, or any whole thing into equal parts, each part is called a **fraction.** If a thing is divided into 2 equal parts, each part, or fraction, is called **one half** ($\frac{1}{2}$). If a thing is divided into 3 equal parts, each fraction is called **one third** ($\frac{1}{3}$). If a thing is divided into 4 equal parts, each part is called **one fourth** ($\frac{1}{4}$). If a thing is divided into 5 equal parts, each part is **one fifth** ($\frac{1}{5}$).



a *b* *c* *d*

1. Which of these cakes (*a*, *b*, *c*, or *d*) is divided into halves? Which is divided into thirds? Into fourths? Into fifths?

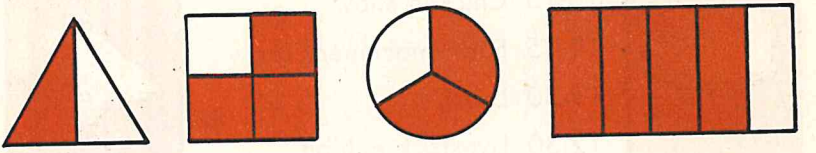
Here are pictures of a circle, a rectangle, a square, and a triangle.



a *b* *c* *d*

2. On your paper, write the fraction that each picture shows.

In the fraction $\frac{1}{2}$, the 2 below the line shows into how many equal parts a thing has been divided. The 1 above the line shows how many of these equal parts we are talking about. The fraction $\frac{2}{3}$ means that something has been divided into 3 equal parts, and that we are talking about 2 of these thirds.



3. Look at the figures above. On your paper write the fraction of the triangle that is in color.

4. Write the fraction of the square that is in color.

5. Write the fraction of the circle that is in color.

6. What fraction of the rectangle is colored?

7. Write the fraction of the triangle that is not colored.

8. What fraction of the square is not colored?

9. What fraction of the circle is not colored?

10. What fraction of the rectangle is not colored?

11. Which would you rather have, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, or $\frac{1}{5}$ of a cake?

12. Which is larger, $\frac{1}{2}$ or $\frac{1}{4}$?

13. Which is smaller, $\frac{1}{3}$ or $\frac{1}{5}$?

Remember: The larger the number under the line in a fraction, the smaller the part is.

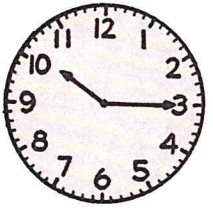
A Day at the Fair

8:00	Leave home
9:10	Band concert
9:30	Sheep show
10:15	Chicken show
10:45	Farm machinery show
11:30	Lunch
12:30	Livestock exhibit
2:20	Cooking demonstration
3:15	Handwork exhibition
3:35	Start for home

Bob and Sue Gray and their parents are going to the fair for a day. "We must plan our trip," said Mr. Gray. "Let's look at the program."

The box above shows how the Grays planned their trip. Mr. Gray said it was their timetable.

1. How many minutes past 9 will it be when the Grays get to the band concert? If the band concert starts at 9:10 and ends at 9:25, how many minutes does it last?



2. The clock at the left shows when the chicken show starts. Bob wants to stay at the chicken show until 10:45. How many minutes will he be at the show?

3. Mr. Gray plans to stay at the sheep show from 9:30 until 10:15. How many minutes will he be at the sheep show?

4. The farm machinery show starts at 10:45. How many minutes before 11 is this?

5. When do the Grays plan to eat their lunch? If they spend 45 minutes eating lunch, what time will it be when they finish their lunch?

6. How many minutes is it from the time the cooking demonstration starts until the Grays are due at the handwork exhibition?

7. If Sue goes to the cooking demonstration at 2:20 and stays there for half an hour, what time will it be when she leaves?

8. It will take the Grays an hour to drive home. What time will it be when they get home?

9. 10:00 **a.m.** means 10 o'clock in the **morning.** 12:00 **m.** means **noon.** 3:00 **p.m.** means 3 o'clock in the **afternoon.** 12:00 **p.m.** means **midnight.** Look at the Gray's "timetable." Which times are **a.m.?** How many are **p.m.?**

10. From midnight to the next midnight is called a **day.** How many hours is it from midnight to noon? From noon to midnight?

There are 24 hours in one day.

11. We are in school from 9:00 a.m. to 3:00 p.m. How many hours a day do we spend in school?

Using Large Time Measures

JANUARY

S	M	T	W	T	F	S
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

FEBRUARY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
..	..	..	..	..	..	..
..	..	..	..	..	..	..

MARCH

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	..	..	..	..
..	..	..	..	..	..	..

APRIL

S	M	T	W	T	F	S
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	..	..
..	..	..	..	..	..	..

MAY

S	M	T	W	T	F	S
..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

JUNE

S	M	T	W	T	F	S
..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..
..	..	..	..	..	..	..

JULY

S	M	T	W	T	F	S
..	..	..	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..
..	..	..	..	..	..	..

AUGUST

S	M	T	W	T	F	S
..	..	..	..	..	..	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

SEPTEMBER

S	M	T	W	T	F	S
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	..	..	..
..	..	..	..	..	..	..

OCTOBER

S	M	T	W	T	F	S
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

NOVEMBER

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	..	..	..	..	..
..	..	..	..	..	..	..

DECEMBER

S	M	T	W	T	F	S
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
..	..	..	..	..	..	..

1. Look at this calendar. How many months are there in a year? Name the months in order.

2. How many days are there in a whole week? Name the days of the week in order.

3. Look at the calendar on page 48. On what day of the week does the Fourth of July come?

4. Each year, Thanksgiving Day is the fourth Thursday in November. On what date is Thanksgiving Day on this calendar?

5. What is the date of Christmas Day every year? On what day of the week does it come on this calendar?

6. What holiday comes the day after December 31?

7. Ann's birthday is September 30. This year her school opened on Sept. 9. How many days is it from Sept. 9 to Ann's birthday? How many weeks is this?

8. How many days in all are there in the three summer months, June, July, and August?

9. How many months have 30 days each?

10. How many months have 31 days?

11. Do you know this rhyme?

Thirty days have September,
April, June, and November.

How many days has each of the other months except February?

There are 365 days in a year.

12. Every four years, we need an extra day in the year. This longer year is called a leap year. The year 1952 was a leap year. What year was the last leap year before 1952? What is the next leap year?

13. How many days has a leap year?

14. In a leap year, the extra day is in February. How many days has February in a leap year?

Using Small Time Measures

Sue has a new wrist watch. It has a sweep second hand. The second hand goes around the watch face once every minute.

There are 60 seconds in a minute.

1. How many seconds are there in half a minute?

2. Sue's father likes his eggs boiled just 3 and one half ($3\frac{1}{2}$) minutes. How many seconds more than 3 minutes should Sue cook his eggs?

3. One morning Sue cooked her father's eggs 45 seconds more than 3 minutes. How many seconds too long did she cook them?

4. If the second hand now points to 8, to what number will it point half a minute from now?

5. Bob asked Sue to time him when he put together a jigsaw puzzle. The first time, it took Bob 4 minutes and 45 seconds. The second time, it took him 4 minutes and 38 seconds. How many seconds less did it take him the second time?

6. Jill ironed a handkerchief in 30 seconds. At this rate, how many can Jill iron in a minute?

7. Can you tell how long 20 seconds is? Close your eyes and have someone time you when you start. When you say, "20 seconds," how close did you come?

Pages 266 and 267 provide enrichment material which can be used after this page.

Do You Know Abbreviations?

Some words are used so often that they are written in short ways. A short way to write a word is called an *abbreviation.* A period comes at the end of every abbreviation.

1. Probably you already know many abbreviations of words used in arithmetic. You may know that "1 lb." means "1 pound," and "2 lb." means "2 pounds," so lb. stands for "pound" or "pounds." 1 oz. means 1 ounce. What does 2 oz. mean? Then what two words can the abbreviation oz. stand for?

2. Tell what two words each of these abbreviations can stand for:

ft. yd. doz. pt. gal. qt.
min. sec. wk. mo. yr.

3. Tell what word each of these abbreviations stands for:

Jan. Feb. Sept. Nov. Mon. Tues. Thurs. Sat.

On your paper, write the abbreviation for each of the following words.

	a	*b*	*c*
4.	pint	quart	gallons
5.	feet	yard	inches
6.	pounds	ounce	dozen
7.	second	minutes	hour
8.	weeks	years	August
9.	December	October	Sunday

Roman Numbers

Roman numbers are an old way of writing numbers, using letters instead of figures. Have you seen Roman numbers on clocks, or in books, or in other places? The letters I, V, and X are used to write Roman numbers up to 39. I means 1, V means 5, and X means 10.

When I is written **before** V or X, it means that 1 is **subtracted** from 5 or 10.

1. IV means 5 − 1, or 4. What does IX mean?

When I is written **after** V or X, it means that 1 is **added** to 5 or 10.

2. VI means 5 + 1, or 6. What does XI mean?

3. II means 1 + 1, or 2. What does III mean?

4. VII means 5 + 2, or 7. What does VIII mean?

5. XII means 10 + 2, or 12. What does XIII mean?

6. Since IV means 4, what do you think XIV means?

7. XVI means 10 + 6, or 16. What does XVII mean? How would you write the Roman number for 18? For 19?

8. XX means 10 + 10, or 20. What does XXX mean?

9. The letter L stands for 50. XL means you subtract 10 from 50. Then what number of ours does XL stand for?

10. XXXVII means 30 + 5 + 2, or 37. What does XXXVIII mean? XXXIX? XXIX? XXIV?

11. On your paper, write the Roman numbers from one to forty.

Fun With Roman Numbers

Let's see whether you understand Roman numbers.

1. Does Chapter X or Chapter VIII come earlier in a book?

2. Draw a clock face, using Roman numbers. What time is it when the hour hand on a clock points to IX and the minute hand points to XII?

3. What time is it when the minute hand points to VI and the hour hand points between II and III?

4. What time is it when the minute hand points to IX and the hour hand points between IV and V?

5. What Roman number comes just before XXX?

6. What Roman number comes just after XIX?

7. What Roman number is twice V?

8. What Roman number is half of X?

9. What Roman number is between XIV and XVI?

10. Which is larger, IX or XI?

11. Which is smaller, XIX or XVIII?

12. Which is largest, XIV or XVI or XV?

13. Which is smallest, XXX or XL or XXV?

14. Arrange these numbers in the order of their size, the smallest first: XXIX, XXXI, XVII.

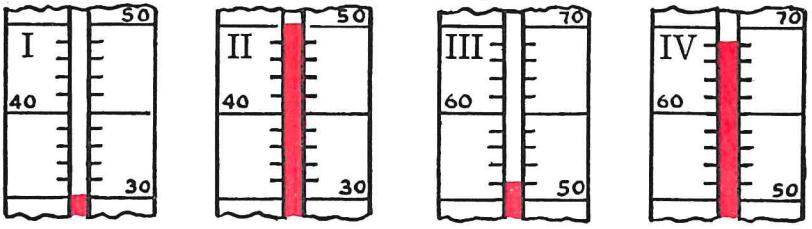
15. What Roman number is 2 less than X?

16. Can you add Roman numbers? What is the sum of VII and VIII?

17. Can you subtract Roman numbers? What is the difference between XII and VI?

Pages 268 and 269 provide enrichment material which can be used after this page.

Measuring Temperature



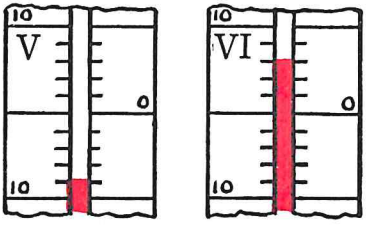
1. Thermometer I shows a temperature of 30° at 8:00 a.m. one March day. The temperature at which water freezes is 32°. How many degrees below the freezing point is 30°?

2. Thermometer II shows the temperature at 11 a.m. What does the thermometer read? How many degrees has the temperature risen since 8:00 a.m.? How many degrees above freezing is it?

3. Thermometer III shows the temperature outdoors one day. How many degrees does it show? Thermometer IV shows the temperature in the schoolroom that day. How many degrees does it read?

What is the difference between the temperature outdoors and the temperature indoors?

4. Thermometer V shows the temperature in the shade one winter day. How many degrees below zero does it read? Thermometer VI shows how many degrees above zero in the sun at the same time? How many degrees warmer was it in the sun than in the shade?



Are These Right?

Some of these statements are right and some are wrong. Number your paper 1 to 7. If a statement is right, write R after its number. If it is wrong, write the correct answer.

1. Chapter III in Nora's book starts on page 27. Chapter IV starts on page 53. Nora thinks that Chapter III is 26 pages long.

2. Tom's uncle is 24 years old. His grandfather is 61 years old. Tom says his uncle is 47 years younger than his grandfather.

3. Don says that he has 17 cabbages in one row of his garden and 18 cabbages in another row, so he has 35 cabbages in all.

4. There are 32 roses in bloom in the garden. Jill told her mother that if she picks 15 of them, there will be 17 roses left.

5. Allen has taken 57 pictures with his camera. He thinks he will have taken 75 pictures if he takes 8 more.

6. The school bus comes by at 8:20. It takes Bob 12 minutes to walk from his house to the bus stop. He says he can leave home at 8:12 and walk to catch the bus.

7. Sally wants to buy a sewing box that costs 45¢ and a puzzle that costs 25¢. She thinks she will need 70¢ to pay for both.

What Numbers Do You Need?

In each of these problems, there is a number that isn't needed to solve the problem. Find which number you don't use. Then work the problem.

1. Sue wanted to buy a croquet set costing $4.50. She had saved $2.85. Then she earned 50¢ more. How much money did she have toward her croquet set?

2. Ellen had 35 jelly beans. She gave 9 of them to Jean, 7 to Ann, and 8 to Bill. How many jelly beans did Ellen give away?

3. Jill picked 17 white tulips and 13 red tulips. She gave a dozen of the tulips to her mother. How many tulips did Jill pick in all?

4. We took 25 egg sandwiches and 18 cheese sandwiches on our picnic. We ate all but 6 of the sandwiches. How many sandwiches did we take on our picnic?

5. Jerry had 116 United States stamps. He traded 19 of them to Bill and 24 to Tom. How many stamps did Jerry trade?

6. Peggy bought a pair of skates for $3.45 and a skating cap for 85¢. She gave the clerk five dollars. How much did the skates and the cap cost?

7. Jean Lane and her family took a 640-mile trip. They drove 108 miles the first morning and 195 miles the first afternoon. How many miles did they drive that day?

8. Joe told his music teacher he would practice on his trumpet 45 minutes before Sunday. He practiced 18 minutes on Thursday and 22 minutes on Friday. How many minutes did he practice on the two days?

9. Mary's mother bought 28 yards of goods. She used 4 yards to make curtains for the hall and 17 yards for bedroom curtains. How many yards did she use?

10. Dick's model plane flew 18 feet. Sam's plane flew 38 feet. Don's plane flew 43 feet. How many feet farther than Dick's plane did Don's plane fly?

11. Sally went to the store for her mother. She bought a honey dew melon for 35 cents and a pound of cherries for 28 cents. She handed the clerk a dollar bill. How much did she spend in all?

12. Tom had saved $2.50. He spent 75 cents to buy a birthday present for his father. The next day he earned 50 cents for helping to wash the car. How much money did Tom have left after he bought the birthday present for his father?

13. Bill and Tom want to sell 50 tickets for the play their pack of Cub Scouts is giving. Bill has sold 17 tickets and Tom has sold 19 tickets. How many tickets have the two boys sold?

14. Don had two dollars to spend at the fair. He bought a cowboy hat for $1.39 and an ice cream soda for 15 cents. How much did he spend?

Pairs of Problems

These problems come in pairs. In each pair, you must find the answer to the first problem before you can do the second problem.

1a. Peggy bought a box camera for $2.57 and some films for 48¢. How much did she pay in all?

1b. She gave the clerk a five-dollar bill. How much change did she get back?

2a. Tom counted 12 oranges and 18 apples in the refrigerator. How many pieces of fruit in all?

2b. If Tom put 8 of these pieces of fruit on the table, how many were left in the refrigerator?

3a. Nancy practiced the piano 18 minutes this morning and 23 minutes this afternoon. How many minutes has she practiced today?

3b. Nancy practices 45 minutes every day. How many more minutes must she practice today?

4a. Last week Bob's hens laid 42 eggs. This week they laid 39 eggs. How many eggs did Bob get in both weeks?

4b. Bob sold all but 9 of these eggs. How many did he sell?

5a. Sue wants to buy some cookie pans for $1.49 and some fancy cookie cutters for 98¢. How much will both of these cost?

5b. Sue has $1.75. How much more money does she still need?

6a. Sam's father took Don and Sam fishing. Don caught 9 fish and Sam caught 12 fish. How many fish did both boys catch?

6b. Sam's father caught 26 fish. How many more did he catch than both boys together?

7a. In Dick's class there are 16 boys and 18 girls. How many children are in his class in all?

7b. Only 29 of Dick's class were present today. How many were absent?

8a. Jean and Ann made napkins for a school party. Jean made 28 and Ann made 25. How many napkins did they make?

8b. If 70 napkins were needed in all, how many more had to be made?

9a. To make a kite string, Dick tied together two pieces of string. One was 75 feet long and the other was 50 ft. How long a string did they make?

9b. Dick's kite string broke and Dick had only 28 feet left. How long was the string Dick lost?

10a. It is 103 miles from Sally's house to her Uncle Larry's house by one road and 87 miles by another road. How much shorter is the second road?

10b. How many miles will Sally's family save by using the shorter road to Uncle Larry's and back?

11a. On a trip, we drove 27 miles the first hour and 43 miles the second hour. How far had we gone?

11b. The whole trip was 108 miles. How many miles did we still have to drive?

Can You Add and Subtract?

Diagnostic Check Test 1A

On the next four pages are three check tests to show you how much arithmetic you have learned so far this year.

This is the first test. It will help you find out how much you know about addition and subtraction. Do your work on another paper. Make sure your answers are correct.

Copy, add, and check.

	a	*b*	*c*	*d*	*e*
1.	487 264	3069 736	$7.45 .96 3.50	83 9 45 138	$ .75 1.28 .64 2.08

Copy, subtract, and check.

2.	107 48	940 206	1365 456	$3.25 .87	$10.00 4.18

3. Find the sum of 1048 and 59.

4. Find the difference between 202 and 52.

Copy each of the following examples and do what the sign tells you to do.

5. 103 − 64

6. 1204 − 907

7. 148 + 52

8. $1.67 + 98¢

9. 478 + 69 + 2075

10. $2.18 + 86¢ + $3

11. $1.25 − 89¢

12. $5 − $1.61

Do You Understand Numbers?

Diagnostic Check Test 1B

How much do you know about the meaning of numbers? Write your answers on another paper.

1. Write the number that is 6 more than 127.

2. Write the number that is 7 less than 212.

3. The number 2467 means how many thousands, how many hundreds, how many tens, and how many ones?

4. \$6.09 means how many dollars, how many dimes, and how many cents?

5. Write the number that means 1 thousand no hundreds 3 tens 2 ones.

6. Write the number that means 7 dollars 5 dimes 6 cents.

7. Write four thousand fifty in figures.

8. Which number is larger, 1978 or 2003? How much larger is it?

9. Which number is smaller, 987 or 1010? How much smaller?

10. Write the number that comes just before 1100.

11. Which fraction is larger, $\frac{1}{3}$ or $\frac{1}{4}$?

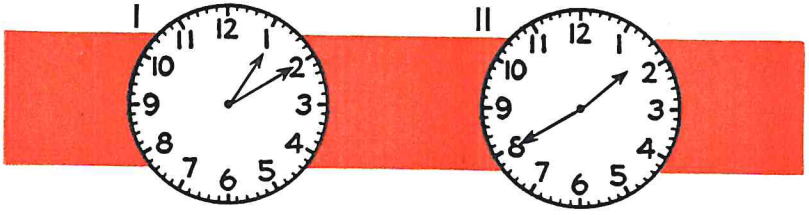
12. What numbers do you add to check the example $324 - 165 = 159$?

13. Which is the largest amount, 3 nickels or 1 quarter or 2 dimes?

Can You Use Numbers?

Diagnostic Check Test 1C

The test on these two pages will show you how much you have learned about using addition and subtraction in problems. Do you know *when* and *why* you add or subtract in a problem?



1. Clock I shows when our puppet show started. Clock II shows when it ended. On your paper write the time the show started and the time it ended, and find how many minutes our puppet show took.

2. A circus show on television started at 7:30. It ended at 5 minutes to 8. How many minutes did it last?

3. On an automobile trip, Jean Lane and her father drove 86 miles in the morning and 154 miles in the afternoon. How many miles did they drive that day?

4. In the book Nora is reading, Chapter IX starts on page 91. Chapter X starts on page 106. How many pages are there in Chapter IX?

5. Last year Dick weighed 65 lb. This year Dick weighs 72 lb. How many pounds has he gained since last year?

6. On a winter day, our thermometer read 6° below zero at 7:00 a.m. At 2:00 p.m. it read 12° above zero. How many degrees warmer was it at 2 o'clock than at 7?

7. Sue put some cakes into the oven at 4:40. They will bake in 18 minutes. At what time should Sue take the cakes out?

8. Don picked 50 lb. of tomatoes. He has sold all but 12 lb. How many pounds has he sold?

9. Joe has practiced on his trumpet for 18 minutes. How many more minutes must he practice to practice half an hour in all?

10. Jean got $2.50 for her birthday. She spent $1.89 of it for a new sweater. How much of her money does she have left?

11. Bill is treasurer of his baseball club. Last week he took in 35¢, 40¢, 50¢, and 25¢ in dues. How much money did he take in?

12. Sally bought $2.65 worth of groceries for her mother. She gave the clerk $3.00. What change should she get back? What is the smallest number of coins she could get?

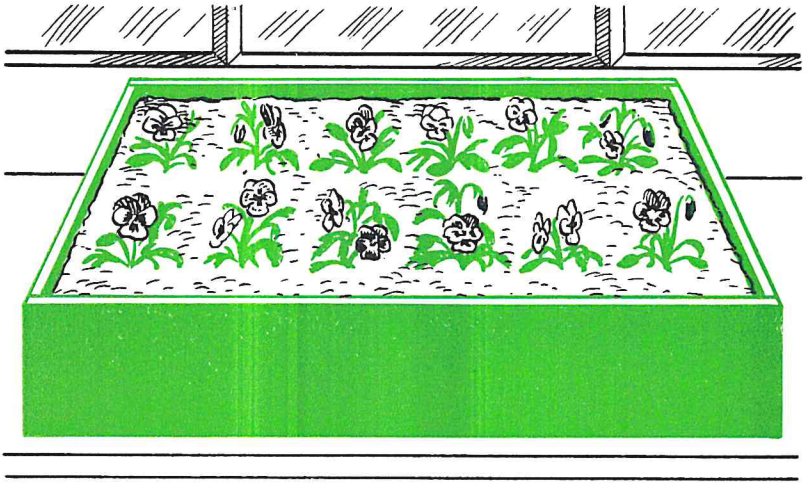
13. Bill has saved $2.80 for a baseball glove costing $4.25. How much more money does he need?

14a. Jill picked 36 roses and 24 zinnias. How many flowers did she pick?

14b. Jill gave 12 of her flowers to her mother and sold the rest. How many flowers did she sell?

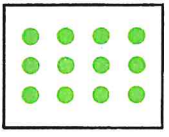
Can You Multiply and Divide?

Do you understand how to multiply and divide? Remember × is "times." It means **multiply**. The sign for dividing is ÷. It means **divided by**.



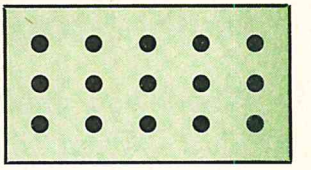
1. Jill has set out some pansy plants in a window box. To find how many plants there are, you can count all the plants, or you can count by *pairs* or by *rows*. How many 2's are there? How many 6's? How much is 6 × 2? How much is 2 × 6?

2. Look at the window box. How many 2's are there in 12? How much is 12 ÷ 2? How many 6's are there in 12? How much is 12 ÷ 6?



3. Finish these facts the dots show.
3 × 4 = ? 4 × 3 = ? 12 ÷ 3 = ?
12 ÷ 4 = ?

4. There are 3 × 5 dots in the box at the right. The dots show that there are three 5's and five 3's.



3 × 5 = ? 5 × 3 = ? 15 ÷ 3 = ? 15 ÷ 5 = ?

5. On your paper make 4 × 5 dots. Then finish these multiplication and division facts your picture shows:

4 × 5 = ? 5 × 4 = ? 20 ÷ 4 = ? 20 ÷ 5 = ?

6. Make 4 × 6 dots on your paper. Write the facts the dots show:

4 × 6 = ? 6 × 4 = ? 24 ÷ 4 = ? 24 ÷ 6 = ?

7. Make 5 × 6 crosses (x). Write the facts the crosses show:

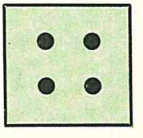
5 × 6 = ? 6 × 5 = ? 30 ÷ 5 = ? 30 ÷ 6 = ?

8. Make 3 × 6 crosses on your paper. Write the four facts the crosses show.

Each of the pictures below shows a multiplication fact and a division fact. On your paper, write the facts each picture shows.

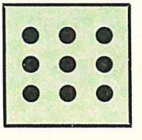
9.

2 × 2 = ?
4 ÷ 2 = ?



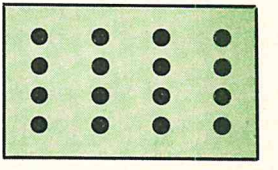
10.

3 × 3 = ?
? ÷ 3 = ?



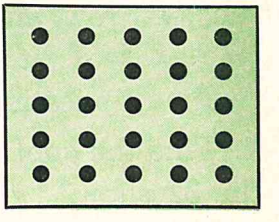
11.

? × ? = ?
? ÷ ? = ?



12.

? × ? = ?
? ÷ ? = ?



Multiplication and Division Facts

When you multiply, the answer is called the **product.** When you divide, the answer is called the **quotient.**

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45

This table shows some of the multiplication and division facts. Do you see how to use the table to find facts? Find $3 \times 5 = 15$. The colored 15 also shows that $5 \times 3 = 15$ and $15 \div 5 = 3$ and $15 \div 3 = 5$.

1. Find the product of 4×9. The 36 shows that: $4 \times 9 = ?$ $9 \times 4 = ?$ $36 \div 4 = ?$ $36 \div 9 = ?$

2. Find the product of 2×7. What two multiplication facts does it show? What two division facts?

3. Find the quotient of $12 \div 4$. Look at the 12 in the "4" row and the "3" column. It shows that $12 \div 4 = 3$. It also shows that $12 \div 3 = 4$. What two multiplication facts does this show?

4. Find the quotient of $32 \div 4$. What four facts does the 32 show?

5. Use 3, 7, and 21 to find four multiplication and division facts.

6. Write four multiplication and division facts using the numbers 5, 8, and 40.

7. Write four facts using 7, 5, and 35.

8. Write four facts using 4, 7, and 28.

Copy these multiplication examples and write the products. Use the table to find a product if you have to.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
9.	9 × 2 =	4 × 5 =	6 × 3 =	4 × 4 =	8 × 4 =	2 × 7 =	6 × 2 =	5 × 5 =
10.	7 × 5 =	9 × 3 =	8 × 2 =	7 × 4 =	2 × 5 =	3 × 6 =	8 × 5 =	3 × 8 =
11.	6 × 4 =	7 × 2 =	3 × 4 =	9 × 5 =	2 × 4 =	5 × 3 =	6 × 5 =	7 × 3 =
12.	9 × 4 =	3 × 5 =	5 × 2 =	5 × 4 =	8 × 3 =	4 × 2 =	3 × 3 =	4 × 6 =

Copy these division examples and write the quotients.

	a	*b*	*c*	*d*	*e*	*f*
13.	$2\overline{)10}$	$3\overline{)21}$	$4\overline{)16}$	$2\overline{)18}$	$5\overline{)25}$	$5\overline{)30}$
14.	$4\overline{)20}$	$5\overline{)45}$	$3\overline{)24}$	$5\overline{)5}$	$4\overline{)12}$	$2\overline{)16}$
15.	$4\overline{)36}$	$2\overline{)12}$	$5\overline{)20}$	$3\overline{)18}$	$5\overline{)40}$	$5\overline{)35}$
16.	$3\overline{)9}$	$5\overline{)15}$	$4\overline{)28}$	$3\overline{)12}$	$2\overline{)14}$	$4\overline{)32}$

When Can You Multiply?

6 6 6 6 6 30	6 5 30

Ellen has bought 5 packages of snappers for her party. There are 6 snappers in each package. To find how many snappers Ellen bought, you can add $6 + 6 + 6 + 6 + 6$. Or you can multiply 5×6 (five 6's). Which way is quicker?

To find the total of several numbers, you can multiply *if all the numbers are the same.* When the numbers are not the same, you must add.

Multiplication is a short way of adding equal numbers.

In some of these quickies, you can multiply. In the rest, you must add.

1. Linda needs six 3-cent stamps to mail some valentines. How much will the stamps cost?

2. Bill spent 7 cents for some marbles, 3 cents for a lollipop, and 5 cents for a pencil. How much did Bill spend?

3. Jim walks 8 blocks every day he goes to school. In 5 days, how many blocks does Jim walk?

4. Peggy can buy 2 jacks for a cent. How many jacks can she get for 5 cents?

5. Sue made a pan of muffins. There were 3 rows of muffins, with 4 muffins in each row. How many muffins did Sue make?

6. Jean had 6 drawing pencils and bought 3 more. How many did she have then?

7. The children in our block have 9 dogs and 8 cats as pets. How many pets are there in our block?

8. Six boys are making bird houses. If each boy makes 4 houses, how many will all the boys make?

9. Don has 7 tomato plants in one row of his garden, and 5 in another row. How many tomato plants does he have in both rows?

10. One of Ann's paper dolls had 3 dresses. Ann cut out 9 more dresses for it. How many dresses did the doll have then?

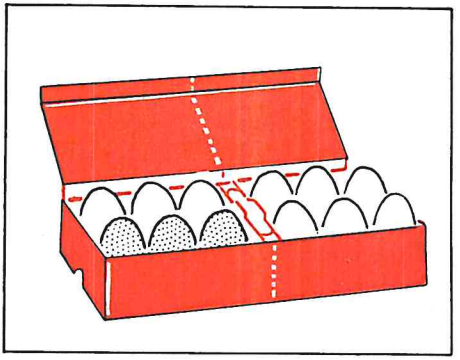
11. Ann is going to make a quilt for her doll bed. It will have 3 rows of pieces with 5 pieces in each row. How many pieces does Ann need for the quilt?

12. Jean's father bought popsicles for 7 children. If popsicles cost 5¢ apiece, how much did he pay?

13. Barbara paid 8¢ for a notebook and 5¢ for an eraser. How much did she spend?

14. One day, Tom put a nickel and 4 pennies into his bank. How much money did he put in that day?

Finding $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$



1. There are a dozen eggs in this box. How many eggs are in each half of the box?

$\frac{1}{2}$ of 12 = ?

One fourth of the eggs are shaded.

How many eggs are shaded? $\frac{1}{4}$ of 12 = ?

One half ($\frac{1}{2}$) means one of two equal parts of a thing or group. One third ($\frac{1}{3}$) means one of three equal parts. One fourth ($\frac{1}{4}$) means one of four equal parts. One fifth ($\frac{1}{5}$) means one of five equal parts.

2. To find $\frac{1}{2}$ of a number, divide the number by 2. By what number do you divide to find $\frac{1}{3}$ of a number? $\frac{1}{4}$ of a number? $\frac{1}{5}$ of a number?

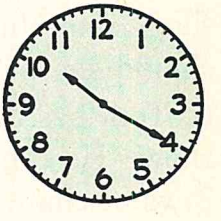
Copy these examples and finish them.

	a	*b*	*c*
3.	$\frac{1}{3}$ of 12 = ?	$\frac{1}{2}$ of 12 = ?	$\frac{1}{4}$ of 12 = ?
4.	$\frac{1}{4}$ of 16 = ?	$\frac{1}{2}$ of 18 = ?	$\frac{1}{2}$ of 8 = ?
5.	$\frac{1}{4}$ of 32 = ?	$\frac{1}{5}$ of 5 = ?	$\frac{1}{5}$ of 10 = ?
6.	$\frac{1}{3}$ of 9 = ?	$\frac{1}{2}$ of 14 = ?	$\frac{1}{3}$ of 21 = ?
7.	$\frac{1}{4}$ of 36 = ?	$\frac{1}{5}$ of 25 = ?	$\frac{1}{2}$ of 6 = ?
8.	$\frac{1}{5}$ of 45 = ?	$\frac{1}{3}$ of 6 = ?	$\frac{1}{5}$ of 20 = ?
9.	$\frac{1}{4}$ of 24 = ?	$\frac{1}{4}$ of 28 = ?	$\frac{1}{3}$ of 27 = ?

Finding Parts of Measures

To answer these questions you must use measure facts. See if you remember them. Just tell the answers or write them on another paper.

1. How many months are there in $\frac{1}{2}$ year?
2. How many months are there in $\frac{1}{4}$ year?
3. One third of a year equals how many months?
4. How many inches are there in $\frac{1}{2}$ foot?
5. A quarter of a foot equals how many inches?
6. How many inches in $\frac{1}{3}$ foot?
7. What measure is equal to half a quart?
8. What measure equals a fourth of a gallon?
9. How many quarts are there in $\frac{1}{2}$ gallon?
10. What measure equals $\frac{1}{3}$ of a yard?
11. How many ounces are there in $\frac{1}{2}$ lb.?
12. A quarter of a pound equals how many ounces?
13. A half dozen eggs equals how many eggs?
14. How many oranges are $\frac{1}{3}$ dozen oranges?
15. How many bananas are $\frac{1}{4}$ doz. bananas?
16. Look at the clock at the right. The minute hand has gone one third of the way around the clock. How many minutes are there in $\frac{1}{3}$ hour?



17. How many minutes equal $\frac{1}{2}$ hr.?
18. How many minutes are there in $\frac{1}{4}$ hr.?
19. How many seconds are there in $\frac{1}{2}$ minute?

Pages 270 and 271 provide enrichment material which can be used after this page.

Using Division Facts

These are division quickies. Just tell the answers. Do not use a pencil and paper unless you need to.

1. Jean's mother bought part of a watermelon for 40 cents. She cut it into 8 equal slices. How much did each slice cost?

2. Sue has 32 cherries. She wants to share them with 3 other girls. How many cherries will each of the 4 girls have?

3. Don is hoeing his garden. He can hoe 3 rows in an hour. If he works at the same speed, how many hours will it take him to hoe 9 rows?

4. Ann earns 5 cents a day for wiping the dishes. How many days will it take her to earn 25 cents?

5. Bill's den of Cub Scouts went on a hike. They went 12 miles in 4 hours. How many miles an hour did they go?

6. Peggy played 8 games of jacks. She won half of them. How many games did she win?

7. Jill has picked 18 roses. She wants to divide them into three equal bunches. How many roses should she put in each bunch?

8. Tom has 35 chairs to put in rows for the puppet show. He can get 7 chairs in each row. How many rows of chairs will there be?

9. Don sold 5 ears of corn for 15 cents. How much was this for each ear?

Do You Multiply or Divide?

Number your paper 1 to 10. After each number, write M or D to show whether you multiply or divide in that problem. Then write the answer to the problem. These are quickies.

1. Sally wants to buy 8 buns. If each bun costs 4¢, how much will 8 buns cost?

2. Dick has 20¢ to spend for apples. If the apples he wants cost 5¢ apiece, how many can he buy?

3. Don sells radishes from his garden for 3¢ a bunch. How much will he get for 9 bunches?

4. Ann can iron a doll dress in 5 minutes. At that rate, how many doll dresses can she iron in 30 minutes?

5. Sue can peel an apple in 2 minutes. How long will it take her to peel 6 apples?

6. Barbara bought 9 3-cent stamps for her mother. How much did the stamps cost?

7. Don has 12 cabbage plants to set out in 3 equal rows. How many plants should he put in each row?

8. Jerry can ride 5 miles an hour on his bicycle. One day, he made 4 trips of one hour each at this speed. How many miles did he ride altogether?

9. If jelly beans are 3 for a cent, how many can Jim buy with 6 cents?

10. For our play, we have 4 rows of chairs with 8 chairs in each row. How many chairs do we have?

Multiplying Larger Numbers

80	
80	
80	80
80	4
320	320

1. Sue Gray's mother bought 4 packages of paper napkins. There were 80 napkins in each package. To find how many napkins Mrs. Gray bought, you can add four 80's or multiply 80 by 4.

In *adding,* add the ones column first: $0+0+0+0=0$. Then add the tens column.

In *multiplying,* too, you start with the ones place. $4 \times 0 = 0$ ones. $4 \times 8 = 32$ tens. See where the 32 is written.

Remember: **Any number times 0 is 0.**

How many napkins did Mrs. Gray get?

Copy these multiplication examples and write the products.

	a	*b*	*c*	*d*	*e*	*f*
2.	41 × 5	72 × 3	54 × 2	60 × 2	81 × 4	72 × 2
3.	53 × 3	50 × 4	31 × 5	63 × 3	52 × 4	80 × 5
4.	83 × 2	70 × 4	31 × 4	20 × 5	42 × 4	91 × 5
5.	81 × 3	72 × 3	41 × 4	92 × 3	80 × 3	70 × 5
6.	90 × 4	61 × 5	43 × 3	91 × 2	50 × 5	62 × 4

Dividing Larger Numbers

1. Ann has a collection of 120 picture post cards. She wants to put them in a book with 4 cards on each page. To find how many pages 120 cards will fill, divide 120 by 4.

	Check
$4\overline{)120}$ 30	30 × 4 = 120

When you divide, always start at the left.

120 is the same as 1 hundred and 2 tens, or 12 tens. 12 tens ÷ 4 = 3 tens. The 3 is written in *tens* place, over the 2. Zero ÷ any number = 0. How many pages will Ann need? To find out whether the answer is right, multiply it by 4. The product is 120.

Copy these examples and divide. Then check by multiplying.

	a	*b*	*c*	*d*	e
2.	$4\overline{)168}$	$5\overline{)105}$	$3\overline{)270}$	$5\overline{)550}$	$2\overline{)188}$
3.	$4\overline{)848}$	$3\overline{)219}$	$4\overline{)128}$	$2\overline{)146}$	$3\overline{)249}$
4.	$5\overline{)455}$	$2\overline{)100}$	$3\overline{)123}$	$5\overline{)300}$	$5\overline{)205}$
5.	$4\overline{)280}$	$4\overline{)324}$	$2\overline{)124}$	$3\overline{)159}$	$2\overline{)280}$
6.	$5\overline{)400}$	$3\overline{)186}$	$4\overline{)364}$	$5\overline{)250}$	$5\overline{)200}$
7.	$3\overline{)396}$	$4\overline{)200}$	$5\overline{)350}$	$2\overline{)164}$	$2\overline{)626}$
8.	$4\overline{)244}$	$5\overline{)405}$	$2\overline{)102}$	$4\overline{)320}$	$3\overline{)999}$
9.	$5\overline{)155}$	$3\overline{)273}$	$4\overline{)208}$	$2\overline{)186}$	$3\overline{)363}$

Using Parts of Measures

These problems are quickies. See if you can solve them "in your head." Do not use pencil and paper unless you have to.

1. Barbara bought 6 sugar cookies. What part of a dozen cookies did she buy? The cookies cost 40¢ a dozen. How much did she pay for the 6 cookies?

2. Barbara also bought 4 raisin buns. What part of a dozen is this? If a dozen raisin buns cost 30¢, how much did Barbara pay for the 4 buns?

3. A dozen of one kind of oranges cost 60¢. How much does Jean's mother have to pay for 6 oranges?

4. If small cupcakes are 48¢ a dozen, how much will Sally have to pay for 3 of them?

5. If ice cream costs 80 cents a quart, how much is a pint of it worth at this rate?

6. Sam bought 8 ounces of cheese to make sandwiches for a fishing trip. What part of a pound of cheese did he buy? If cheese was 80¢ a pound, how much did he pay for 8 ounces?

7. There are 4 bars of butter in a pound of butter. What part of a pound is each bar? How many ounces does each bar weigh? How many bars are there in half a pound of butter?

8. Spring, summer, fall, and winter are the seasons of the year. What part of a year is each season? How many months are there in each season?

Which Measure Is Larger?

To answer these questions, you need to know measure facts and how to find parts of numbers. See how many questions you can answer without using your pencil.

1. Which is more, $\frac{1}{2}$ doz. eggs or 5 eggs?
2. Which is more, $\frac{1}{4}$ doz. eggs or 5 eggs?
3. Which is longer, $\frac{1}{2}$ ft. or 8 in.?
4. Which is more, $\frac{1}{3}$ doz. lemons or 3 lemons?
5. Which time is longer, $\frac{1}{4}$ yr. or 6 mo.?
6. Which is longer, $\frac{1}{3}$ yr. or 3 mo.?
7. Which is larger, $\frac{1}{2}$ gal. or 3 qt.?
8. Which is heavier, $\frac{1}{4}$ lb. or 6 oz.?
9. Which is heavier, $\frac{1}{2}$ lb. or 6 oz.?
10. Which is longer, $\frac{1}{2}$ min. or 20 sec.?
11. Which is longer, $\frac{1}{4}$ min. or 20 sec.?
12. Which is longer, $\frac{1}{3}$ yd. or 2 ft.?
13. Which is longer, $\frac{1}{4}$ hr. or 10 min.?
14. Which measure is larger, $\frac{1}{2}$ qt. or 2 pt.?
15. Which measure is larger, $\frac{1}{4}$ ft. or 4 in.?
16. Which measure is larger, $\frac{1}{2}$ doz. or $\frac{1}{4}$ doz.?
17. Which is heavier, $\frac{1}{2}$ lb. or $\frac{1}{4}$ lb.?
18. Which is larger, $\frac{1}{3}$ doz. or $\frac{1}{2}$ doz.?
19. Which is larger, $\frac{1}{3}$ doz. or $\frac{1}{4}$ doz.?
20. Which is longer, $\frac{1}{4}$ hr. or $\frac{1}{2}$ hr.?
21. Which is larger, $\frac{1}{4}$ ft. or $\frac{1}{3}$ ft.?
22. Which is longer, $\frac{1}{3}$ yr. or $\frac{1}{2}$ yr.?

Writing Money Numbers

1. In a store window, Jean saw a box of paints marked $2.09. How do you read this number? Why is there a zero in this number?

Read these money numbers.

	a	*b*	*c*	*d*
2.	$ 3.25	$ 9.60	$ 4.01	$10.73
3.	$ 1.40	$35.07	$17.12	$ 5.00
4.	$20.96	$44.19	$75.13	$14.11

5. On your paper, write one dollar and five cents in figures. Remember there must be two figures after the point.

6. Write fifteen cents in figures, with the dollar sign and the point.

Write in figures the numbers in Examples 7-13, using the dollar sign and the point.

7. Four dollars and thirteen cents.

8. Ten dollars and thirty cents.

9. Six dollars and eight cents.

10. Twelve dollars and eighteen cents.

11. Sixteen dollars.

12. Forty dollars and eighty-one cents.

13. Seventy-six cents.

14. Write these numbers in figures in columns. Find the sum: Thirteen dollars, nine dollars and forty cents, eleven dollars and six cents, eighty-nine cents.

Multiplying Dollars and Cents

1. Sam bought 3 rabbits for 90¢ each. To find how much he paid for them, you can add or multiply. Which way is quicker? Is the sum the same as the product?

\$ .90 .90 .90 \$2.70	\$ .90 3 \$2.70

Copy and multiply.

	a	*b*	*c*	*d*	e
2.	\$ .43 2	\$ .60 4	\$ .33 3	\$ .12 4	\$ .64 2
3.	\$ .82 3	\$ .53 2	\$ .31 5	\$ .42 3	\$ .41 5
4.	\$ .80 4	\$ .30 5	\$ .82 4	\$ .72 3	\$ .91 3
5.	\$1.32 3	\$1.44 2	\$2.10 5	\$1.04 4	\$7.03 2
6.	\$2.00 5	\$5.10 5	\$5.31 3	\$8.20 2	\$4.05 4
7.	\$3.07 4	\$4.08 5	\$1.13 3	\$9.32 2	\$6.09 5
8.	\$2.03 3	\$6.06 3	\$9.00 4	\$4.07 5	\$3.01 4
9.	\$7.01 5	\$9.20 3	\$6.05 5	\$5.06 4	\$8.04 3
10.	\$9.20 4	\$3.07 3	\$8.09 5	\$8.09 2	\$4.07 4

Dividing Dollars and Cents

$$\begin{array}{r} \$\ .40 \\ 5\overline{)\$2.00} \end{array}$$

Check

$$\begin{array}{r} \$\ .40 \\ \times\quad 5 \\ \hline \$2.00 \end{array}$$

1. Bob sold a chicken for \$2. The chicken weighed 5 pounds. To find how much Bob got per pound (for each pound), divide \$2.00 by 5.

Start at the left. In the quotient, write the point just above the point in the \$2.00.

You can check division with money numbers by multiplication just as you check with other numbers. If Bob gets 40¢ a pound for his 5-pound chicken, he should get 5 × \$.40, or \$2.00, for the chicken.

$$\begin{array}{r} \$\ .07 \\ 5\overline{)\$\ .35} \end{array}$$

2. Sally paid \$.35 for 5 grapefruit. Divide \$.35 by 5 to find how much each grapefruit cost. Do you see why you have to write a zero in the quotient? There must be two figures after the point.

How do you check this answer?

Copy, divide, and check.

	a	*b*	*c*	*d*
3.	$4\overline{)\$\ .32}$	$5\overline{)\$\ .45}$	$3\overline{)\$\ .93}$	$2\overline{)\$\ .86}$
4.	$2\overline{)\$1.24}$	$5\overline{)\$3.55}$	$3\overline{)\$2.10}$	$4\overline{)\$2.04}$
5.	$3\overline{)\$6.03}$	$2\overline{)\$4.08}$	$4\overline{)\$8.48}$	$3\overline{)\$2.76}$
6.	$2\overline{)\$10.24}$	$3\overline{)\$18.00}$	$2\overline{)\$14.06}$	$5\overline{)\$15.50}$
7.	$5\overline{)\$3.00}$	$4\overline{)\$3.60}$	$5\overline{)\$40.05}$	$4\overline{)\$24.48}$

Nora's Books

Chapter	Contents	Page
I.	A Strange Adventure	5
II.	Kathy Finds a Box	16
III.	Where Did Tip Go?	30
IV.	The House in the Woods	45
V.	A Friend in Need	61

1. Above is part of the Table of Contents of a book Nora is reading. On what page does the second chapter begin? On what page does the third chapter start? How many pages are there in the second chapter?

2. Which one of the first four chapters has the largest number of pages? How many pages does it have?

3. One of Nora's books has 280 pages. Another book has 252 pages. The first book has how many more pages than the second book?

4. It took Nora 15 minutes to read 3 pages in a reference book. How many minutes was this for each page?

5. If Nora reads 20 pages an hour, how many pages can she read in 4 hours?

6. Nora has 12 books on her "waiting list" of books she wants to read. If she reads 4 books a week, how many weeks will it take her to read the 12 books?

How many of these problems could you do in your head?

Multiplication With Carrying

\$1.75 1.75 1.75 1.75 \$7.00	\$1.75 4 \$7.00

1. Four boys want to start a harmonica band. They can get harmonicas for \$1.75 each. To find how much money they need to buy four harmonicas, you can add or you can multiply.

When you add, you carry twice. When you multiply, you carry twice, too. Is your sum the same as your product? Which way was quicker?

How much money do the boys need?

Copy and multiply.

	a	*b*	*c*	*d*	*e*
2.	35 2	26 3	14 5	46 2	94 4
3.	43 5	65 4	87 2	35 5	79 2

Copy and multiply.

	a	b	c	d	e
4.	\$ .74 × 3	\$ .49 × 5	\$ .38 × 4	\$ .46 × 2	\$ .68 × 3
5.	235 × 2	124 × 3	216 × 4	307 × 3	107 × 5
6.	704 × 4	518 × 5	904 × 2	719 × 5	805 × 3
7.	\$1.38 × 2	\$6.29 × 3	\$3.06 × 5	815 × 5	\$7.06 × 3
8.	463 × 2	230 × 4	182 × 4	180 × 5	480 × 2
9.	\$3.62 × 3	\$2.90 × 3	\$4.61 × 5	\$5.40 × 5	\$6.30 × 4
10.	254 × 3	485 × 3	173 × 5	534 × 4	267 × 5
11.	509 × 4	970 × 3	809 × 5	648 × 4	382 × 5
12.	\$3.97 × 4	\$4.62 × 5	\$6.54 × 3	\$2.38 × 2	\$7.21 × 4
13.	\$10.95 × 2	\$6.25 × 5	\$12.87 × 3	\$14.75 × 4	\$12.97 × 5

	a	b	c
14.	4 × \$4.08	5 × \$5.60	2 × \$1.98
15.	3 × \$2.65	5 × \$7.19	4 × \$16.25

Pages 272 and 273 provide enrichment material which can be used after this page.

Using Money Numbers

How well can you use multiplication and division of money numbers in problems? Read each problem carefully. Decide whether you should use multiplication or division to solve it. Then find the answer.

1. Don's father said he would pay Don 35 cents an hour for helping spray the apple trees. How much will Don earn in 5 hours?

2. Don can save $5 a month. How many months will it take him to save enough to buy a $40 bicycle?

3. Ellen bought 3 quarts of ice cream for her party. It cost $.80 a quart. How much did Ellen pay for the ice cream?

4. The boys on Bill's team want to buy 4 baseball gloves. How much will they need if each glove costs $6.65?

5. Five children in a club are saving to buy a $15.50 radio. How much must each person save?

6. Last month Linda saved $1.55. This month she plans to save twice as much. How much does Linda plan to save this month?

7. Don and his father bought some garden tools for $4.88. Don said he would pay one fourth of the cost. How much did Don pay?

8. Jean has earned $1.50. She would like to have three times that much to buy Christmas presents. How much money does she want?

9. Bob's father paid $1.60 for a gallon of oil for his car. How much a quart did he pay for the oil?

10. If Jerry can save 80¢ a week, how much will he save in 4 weeks?

11. Ann got $1.50 for her birthday. She said she would save a third of it and spend the rest. How much did Ann plan to save?

12. Bob raises chickens and sells the eggs they lay. In 3 months he took in $27.69 more than he spent. How much did he earn per month, on the average?

13. Bob is charging 49 cents a dozen for his eggs. How much should he get for 3 dozen eggs?

14. Joe's trumpet lessons cost $1.25 apiece. How much will 5 lessons cost?

15. Jill's oldest sister Kay worked in a store 3 Saturday afternoons. She got $9.60 in all. How much a Saturday was this?

16. If Jean saves 5 cents a day, how many days will it take her to save enough to buy a paint book costing a quarter?

17. In a bakery shop, Sally saw a sign that said 9 blueberry muffins cost $.45. How much apiece did the muffins cost?

18. In the same store, a coconut layer cake cost $1.20. How much should half of a coconut cake cost?

19. If half of a chocolate cake is sold for 55 cents, how much should a whole cake cost?

What Process Should You Use?

Here are some quickies. They use all four processes. In some of the problems you add, in some you subtract, in some you multiply, and in some you divide. Number your paper 1 to 16. Write A, S, M, or D after each number to show whether you add, subtract, multiply, or divide in that problem. Then write the answer to the problem. Try to do all the problems in your head.

1. Sally paid 40 cents for 5 pounds of apples. How much was this for each pound?

2. A merry-go-round ride lasts 4 minutes. Tom's little sister had 8 rides. How many minutes did she ride on the merry-go-round?

3. Jean's cat Jiggs weighs 6 pounds. Ann's dog Spot weighs 18 pounds. How much heavier is Spot than Jiggs?

4. Sally spent a quarter for knitting needles and half a dollar for some yarn. How much did she spend altogether?

5. Last year Linda was 49 inches tall. This year she has grown 3 inches. How tall is she now?

6. If Mr. Lane can drive his car steadily at 40 miles an hour, how many miles can he go in 4 hours?

7. In one hour, Jerry rode his bicycle 5 miles. In one hour, Jerry's father drove his car 35 miles. How many times as fast as Jerry did his father go?

8. Tom's family has a summer cottage. Tom's job is to fill the wood box. It holds 24 sticks of wood. If Tom can carry 6 sticks of wood at a time, how many trips must he make to fill the box when it is empty?

9. Yesterday Nancy practiced her piano lesson for only 8 minutes. Today she practiced 32 minutes. How many minutes has she practiced in all?

10. If jelly beans are three for a cent, how many can Barbara buy with 9 cents?

11. Sue baked 15 cookies and gave 3 of them to Bob. How many did she have left?

12. Ellen gave 6 candy hearts to each of 3 friends. How many candy hearts did she give away?

13. Sue put some biscuits in the oven 5 minutes ago. The biscuits take 20 minutes to bake. How many more minutes must they be in the oven?

14. Jill has picked 18 roses. If she divides them into three equal bunches to put into vases, how many roses will there be in each bunch?

15. Tom got 15 new shells for his shell collection, and 8 new stones for his stone collection. How many more shells than stones did he get?

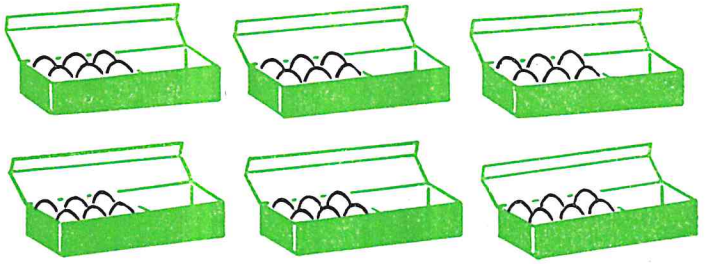
16. Ann is collecting postcards. Four of Ann's friends have promised to send her 5 postcards apiece from their vacation trips this summer. How many postcards would this make for Ann's collection?

Pages 274 and 275 provide enrichment material which can be used after this page.

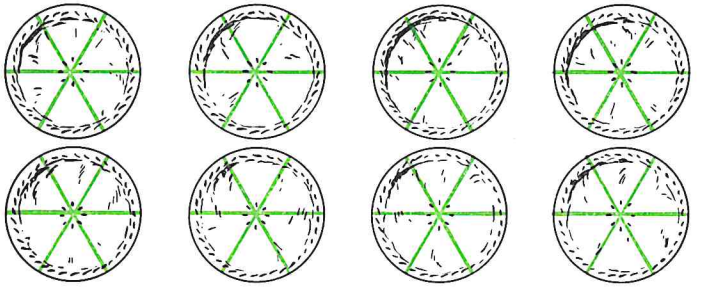
The 6's in Multiplication

1. You had some multiplication facts about 6 when you learned about the 2's, 3's, 4's, and 5's. How much is 2×6? 3×6? 4×6? 5×6? 6×2? 6×3? 6×4? 6×5?

How much is 1×6? 6×1?



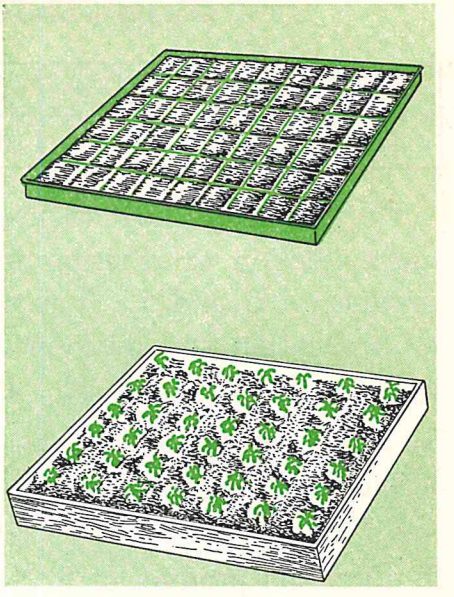
2. Bob has orders for 6 half-dozens of eggs. To find how many eggs he needs to fill the orders, you can count the eggs. Or you can add six 6's: $6 + 6 + 6 + 6 + 6 + 6 = ?$ Or you can multiply: $6 \times 6 = ?$



3. In our cafeteria, we had 8 pies for lunch. Each pie was cut into 6 pieces. To find how many pieces of pie there were, add eight 6's. Or multiply: $8 \times 6 = ?$ What is the product of 6×8?

4. Sue made a pan of fudge. She cut it into 6 rows with 9 pieces in each row. To find the number of pieces, you can add or multiply by rows or columns.

Six 9's = ? Nine 6's = ?



5. Don bought a box of tomato plants. There were 6 rows of plants, with 7 plants in each row. Find the number of plants in two ways:

Seven 6's = ? Six 7's = ?

The 6's in Division

1. You already know some division facts about 6. What is the quotient of 12 ÷ 2? 12 ÷ 6? 18 ÷ 3? 18 ÷ 6? 24 ÷ 4? 24 ÷ 6? 30 ÷ 5? 30 ÷ 6?

2. Look at the picture of Bob's eggs on page 88. When Bob puts 36 eggs in 6 boxes, how many eggs has he in each box? 36 ÷ 6 = ?

3. Look at the picture of the pies on page 88.

48 ÷ 6 = ? 48 ÷ 8 = ?

4. Look at the picture of Sue's fudge above.

54 ÷ 6 = ? 54 ÷ 9 = ?

5. Look at the tomato plants. 42 ÷ 6 = ? 42 ÷ 7 = ?

Finding Facts About 6

	1	2	3	4	5	6	7	8	9
6	6	12	18	24	30	36	42	48	54

Do you know how to use this table to find any multiplication or division fact about 6? Find the product of 6 and 7. It is 42. The 42 shows four multiplication and division facts:

$6 \times 7 = 42 \quad 7 \times 6 = 42 \quad 42 \div 7 = 6 \quad 42 \div 6 = 7$

1. Find the product of 6×9. Finish the facts it shows:

$6 \times 9 = ? \quad 9 \times 6 = ? \quad 54 \div 6 = ? \quad 54 \div 9 = ?$

2. Find the product of 6×8. What two multiplication facts does it show? What two division facts?

3. Find the quotient of $24 \div 6$ by first finding the 24. What other division fact does this show? What two multiplication facts?

4. Use the table to find six 6's. $6 \times 6 = ?$

5. Use the table to find how many 6's there are in 48. $48 \div 6 = ?$

Copy and finish these multiplication facts about 6.

	a	*b*	*c*	*d*	e	*f*	*g*	*h*
6.	6	8	6	5	7	3	1	2
	6	6	9	6	6	6	6	6
7.	6	4	6	6	6	9	6	6
	8	6	4	7	3	6	1	5

Copy and finish these division facts about 6.

	a	b	c	d	e
8.	$6\overline{)42}$	$5\overline{)30}$	$7\overline{)42}$	$6\overline{)54}$	$6\overline{)6}$
9.	$6\overline{)24}$	$8\overline{)48}$	$6\overline{)18}$	$1\overline{)6}$	$6\overline{)48}$
10.	$6\overline{)36}$	$3\overline{)18}$	$6\overline{)30}$	$4\overline{)24}$	$9\overline{)54}$

To find one sixth ($\frac{1}{6}$) of a number, divide by 6.

Copy and finish these examples.

	a	b	c
11.	$\frac{1}{6}$ of 42 = ?	$\frac{1}{6}$ of 18 = ?	$\frac{1}{6}$ of 54 = ?
12.	$\frac{1}{6}$ of 48 = ?	$\frac{1}{6}$ of 36 = ?	$\frac{1}{6}$ of 6 = ?
13.	$\frac{1}{6}$ of 30 = ?	$\frac{1}{6}$ of 12 = ?	$\frac{1}{6}$ of 24 = ?

14. Six boys go on a picnic. They take 24 sandwiches. If each boy gets $\frac{1}{6}$ of the sandwiches, how many will he get?

15. Six friends went on an automobile trip. Their trip cost $54. If the friends share the cost equally, how much must each one pay?

Copy and write the missing numbers.

	a	b	c	d
16.	6 × 5 = ?	6 × 8 = ?	7 × 6 = ?	9 × 6 = ?
17.	6 × 6 = ?	6 × 4 = ?	6 × 7 = ?	8 × 6 = ?
18.	6 × 9 = ?	6 × 3 = ?	2 × 6 = ?	5 × 6 = ?
19.	42 ÷ 6 = ?	54 ÷ 6 = ?	36 ÷ 6 = ?	12 ÷ 6 = ?
20.	30 ÷ 6 = ?	6 ÷ 6 = ?	24 ÷ 6 = ?	18 ÷ 6 = ?

Using the 6's

Here are some quickies that use multiplication and division facts about 6. Just tell the answers, or write them on another paper.

1. Jean is cutting out 48 red hearts for class valentines. She can get 8 hearts from each sheet of red paper. How many sheets of paper will she need for the hearts?

2. Tony wants to buy a half dozen handkerchiefs for 9¢ each. How much money will Tony need?

3. Bob and Sue bought 6 packages of doughnuts for their Halloween party. There were 6 doughnuts in each package. How many doughnuts did they buy?

4. The 24 boys and girls in Ann's room are going on a school picnic. If 6 can be taken in each car, how many cars will be needed to carry them?

5. A quart of ice cream will serve 6 persons. How many people will 7 quarts serve?

6. If Linda paid 6¢ for a quarter pound of gum drops, how much do gum drops cost a pound?

7. If cupcakes cost 7 cents apiece, how many cupcakes can I buy for 42 cents?

8. Six boys bought a dozen hot dogs for a hike. If they shared them equally, how many hot dogs did each boy get?

9. How many cents must Don pay for 8 tomato plants, if each plant costs 6¢?

10. Dick has a board 54 inches long. He wants to saw it into pieces 6 inches long. How many pieces of this length can he get out of the board?

11. Dick had another board 48 inches long. He cut this board into 6 equal pieces. How long was each piece of board?

12. Don has 18 apples to share with 5 of his friends. What part of the apples will each of the 6 boys get? How many apples will each boy get?

13. If pears cost 5 cents apiece, how much will half a dozen pears cost?

14. Bob and Sue are making popcorn balls for a school sale. One can of popcorn makes 9 balls. How many cans will they have to pop to make 54 balls?

15. Jim bought a bag of peanuts for 5 cents. He counted the peanuts in the bag and found that there were 30. How many peanuts for a penny was this?

16. Sally has bought some cookies at the bakery. She bought three kinds, a half dozen of each kind. How many cookies did she buy altogether?

17. At the bakery, Sally saw that muffins were on sale for 24 cents a half dozen. How much did each muffin cost?

18. Ann wants to save 30 cents to buy a puzzle. If she saves 6 cents a day, how many days will it take her to save enough money for the puzzle?

19. Jill is setting out 18 pansy plants in 6 rows in a window box. How many plants go in each row?

Multiplying With 6's

See if you can multiply larger numbers with 6's. You carry in many of these examples.

Copy and multiply. Check by going over your work.

	a	b	c	d	e
1.	51 × 6	62 × 6	70 × 6	39 × 6	48 × 6
2.	79 × 6	84 × 6	46 × 5	128 × 6	309 × 6
3.	\$ .26 × 5	\$2.46 × 3	\$3.67 × 5	\$4.64 × 6	\$6.50 × 4

Practice in Multiplication

These examples will help you remember the multiplication you have had.

Copy, multiply, and check.

	a	b	c	d	e
1.	67 × 4	58 × 3	94 × 5	68 × 2	93 × 6
2.	307 × 3	158 × 4	475 × 2	270 × 5	638 × 5
3.	\$4.90 × 4	\$1.49 × 3	\$2.78 × 6	\$3.09 × 2	\$1.25 × 5
4.	\$2.60 × 3	\$1.45 × 6	\$2.39 × 4	\$4.68 × 5	\$6.09 × 6

Dividing With 6's

1. Can you divide larger numbers with 6's? On your paper, divide 480 by 6. Check your work by multiplying your answer by 6.

Copy these examples and find the quotients. Check by multiplying.

	a	*b*	*c*	*d*
2.	$6\overline{)426}$	$6\overline{)360}$	$6\overline{)546}$	$6\overline{)420}$
3.	$6\overline{)486}$	$6\overline{)300}$	$5\overline{)305}$	$4\overline{)244}$
4.	$6\overline{)1206}$	$6\overline{)2400}$	$6\overline{)4806}$	$4\overline{)2480}$
5.	$6\overline{)4206}$	$3\overline{)1830}$	$2\overline{)1286}$	$6\overline{)3606}$
6.	$6\overline{)\$2.46}$	$6\overline{)\$4.80}$	$3\overline{)\$1.89}$	$5\overline{)\$30.50}$
7.	$2\overline{)\$12.48}$	$6\overline{)\$18.60}$	$4\overline{)\$24.00}$	$6\overline{)\$3.06}$

Arithmetic Words and Signs

Do you know arithmetic words and signs?

1. What is the answer called in division?

2. What is the name of the answer in multiplication?

3. What process do you use to find a remainder?

4. What is the name of the answer in addition?

5. What does the sign $-$ tell you to do?

6. What does the sign $+$ tell you to do?

7. What does the sign $\div$ tell you to do?

8. What does the sign $\times$ tell you to do?

Finding the Average

$$5\overline{)155}\quad 31$$

The Lanes took a trip in their car. In 5 hours, they drove 155 miles. How many miles an hour did they go *on the average?*

To find out, you divide 155 by 5. The Lanes' average speed was 31 miles an hour.

To find the average, you divide.

What does the average mean? Of course, the Lanes did not go at the same speed all the time. They had to drive slowly in the city and to stop at traffic lights. Sometimes they could go fast. Their average speed is the number of miles they would have gone each hour if they had driven at the same rate all the time.

The average is often a useful thing to know. If the Lanes know their average speed, they can tell about how many miles they might drive in 3 hours, or in 6 hours. This will help them estimate how long it will take them to drive somewhere.

In these problems, find the average. Think how it might help to know the average in each situation.

1. In 4 weeks, Tom saved $3.20. On the average, how much a week did he save?

2. Bob's hens laid 368 eggs in 4 weeks. Find the average number of eggs they laid each week.

3. It took Jill one hour to iron 3 dresses. How many minutes on the average is this for each dress?

4. On their trip, the Lanes found that 5 gallons of gasoline took them 105 miles. On the average, how many miles could they go on one gallon ?

5. Bill was paid $1.80 for helping to cut 3 lawns. The lawns were all about the same size. How much did Bill get for each lawn, on the average?

6. Nancy counted up the number of minutes she practiced, one week. It was 186 minutes in 6 days. On an average, how many minutes a day did Nancy practice?

7. Bill is learning to bowl. In 3 games, he made 249 points in all. How many points a game did Bill average?

8. In 5 school days, Jean paid a total of $1.50 for her lunches. Find the average cost of each day's lunch.

9. From 6 tomato plants, Don picked 126 tomatoes during the summer. What was the average number of tomatoes from each plant?

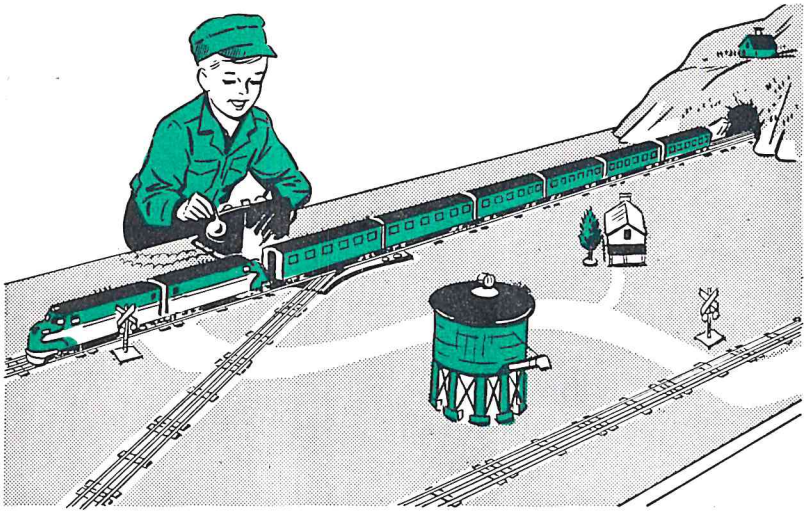
10. In 4 days, Don and his father picked 128 quarts of strawberries to sell. On the average, how many quarts a day did they pick?

11. Nora had a story book 160 pages long. It took her 8 hours to finish reading the book. Find the average number of pages she read in an hour.

12. Don sold 6 watermelons for $3.00. What was the average price?

Pages 276 and 277 provide enrichment material which can be used after this page.

Tom's Trains



All four processes are used in these problems about Tom's trains. Read each problem carefully and decide first whether you should add, subtract, multiply, or divide. Do the work on another paper.

1. Tom had a wind-up train 48 in. long. The track was 3 times as long as the train. How long was the track?

2. This train and track cost $4.49. Tom sold them for $2.25 when his father got him an electric train. How much less did Tom get than he had paid for the train and track?

3. The electric train cost $24.75. The clerk said this was $2.75 less than the price used to be. What had the train cost before?

4. Tom bought 6 extra pieces of curved track. Each piece was 12 in. long. How many inches of extra track did he buy?

5. These 6 extra pieces of track cost Tom $1.20. How much did each piece cost?

6. Tom has a passenger train 54 in. long. There are 6 cars in this train. What is the average length of each car?

7. Tom can buy more freight cars for $1.98 apiece. How much will three of these freight cars cost?

8. A water tower costs $3.95 and a highway signal costs $2.75. What will both of these cost Tom?

9. Tom wants a remote control electric switch. He can get one kind for $7.45. A better one costs $10.95. How much more does the better switch cost?

10. Tom is going to buy the $7.45 switch. He has saved $5.90 toward it. How much more money does he need?

Thinking About Numbers

1. What number is 4 times as large as 8?

2. What number is half as large as 16?

3. What number is 6 more than 24?

4. What number is 9 less than 27?

5. How much larger is 20 than 5?

6. Thirty is how many times as large as 6?

7. How many 4's are there in 20?

8. What number equals six 6's?

Practice in Adding and Subtracting

Let's brush up on addition and subtraction.

Copy and add *down*. Check by adding *up*.

	a	*b*	*c*	*d*	*e*
1.	48 56 83 59	38 9 127 65	424 86 317 506	93 8 267 34	680 716 208 342
2.	\$ .96 .74 .31 .05	\$3.17 1.84 6.08	\$5.24 7.60 4.79 2.65	\$4.00 4.89 .60 1.18	\$ 7.96 .72 10.50 3.40

Copy and subtract. Check by adding.

3.	136 42	544 37	329 143	875 297	645 376
4.	\$3.12 .95	\$4.70 .76	\$6.17 1.48	\$7.25 4.38	\$8.00 7.68

Copy these examples in columns. Do what the signs tell you to do.

	a	*b*
5.	69 + 186 + 7 + 206	867 − 559
6.	255 + 8 + 51 + 917	1071 − 272
7.	\$1.69 + 35¢ + \$2.05	\$1.30 − 95¢
8.	\$.67 + \$1.82 + \$10.94	\$10.75 − \$4.09
9.	\$12.28 + \$3.35 + 90¢	\$10 − \$8.90

Right or Wrong?

Here are some more problems with statements of answers. Some of the answers are right and some are wrong. Number your paper 1 to 7. If a statement is right, write R after its number. If it is wrong, write the correct answer.

1. Jim's kite string was 120 ft. long. The string broke and Jim had only 25 ft. of string left. Jim thought he had lost 95 ft. of string.

2. Nancy practiced on the piano 18 minutes on Friday and 25 minutes on Saturday. She said she had practiced 55 minutes in all.

3. The 3 largest school buses at Sam's school can each carry 48 pupils. Sam says the 3 buses can carry 164 pupils at one time.

4. Bill bought a rocket plane for 65 cents. He handed the clerk two quarters, a nickel, and a dime, and said, "That's the right amount, I believe."

5. Sally had $3.00 when she went to the store for her mother. She had $1.15 left when she came home. She must have spent $1.85.

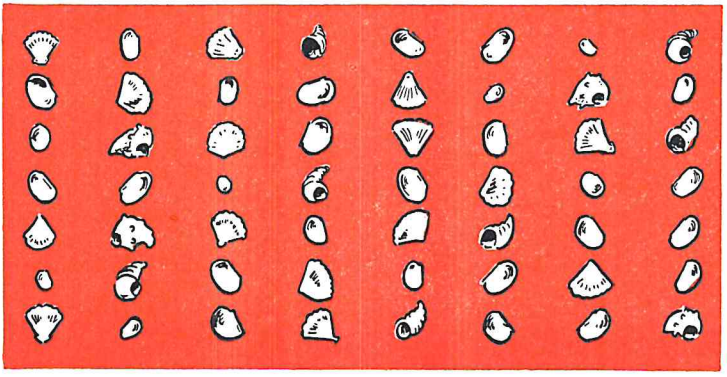
6. Bill's model plane flew 19 ft. Tom's plane flew 42 ft. Tom claimed his plane flew 33 ft. farther than Bill's.

7. Jean paid 25¢ for lunch on Monday, 18¢ on Tuesday, and 24¢ on Wednesday. She thought she had paid 67¢ in all.

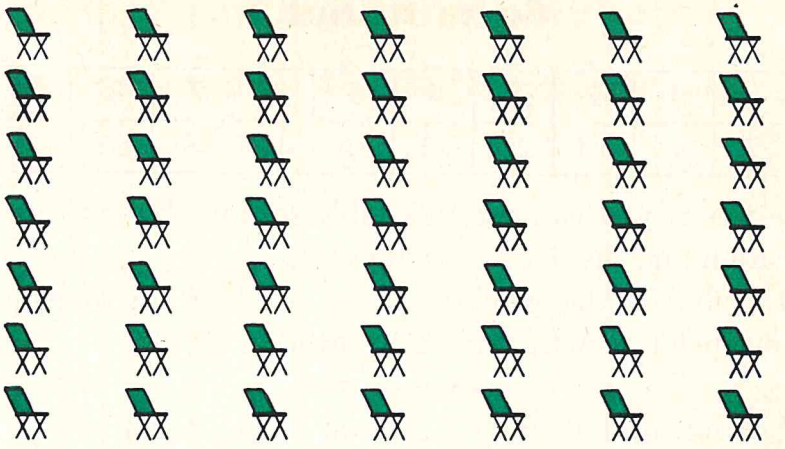
Multiplying and Dividing With 7

You have already had most of the multiplication and division facts about 7. See if you remember them. Give the missing numbers:

	a	*b*	*c*	*d*
1.	$1 \times 7 = ?$	$7 \times 1 = ?$	$7 \div 1 = ?$	$7 \div 7 = ?$
2.	$2 \times 7 = ?$	$7 \times 2 = ?$	$14 \div 2 = ?$	$14 \div 7 = ?$
3.	$3 \times 7 = ?$	$7 \times 3 = ?$	$21 \div 3 = ?$	$21 \div 7 = ?$
4.	$4 \times 7 = ?$	$7 \times 4 = ?$	$28 \div 4 = ?$	$28 \div 7 = ?$
5.	$5 \times 7 = ?$	$7 \times 5 = ?$	$35 \div 5 = ?$	$35 \div 7 = ?$
6.	$6 \times 7 = ?$	$7 \times 6 = ?$	$42 \div 6 = ?$	$42 \div 7 = ?$



7. Tom is mounting some shells from his collection. He has mounted 7 rows of shells with 8 shells in each row. To find how many shells he has mounted you can add seven 8's or eight 7's. Or you can multiply: $7 \times 8 = 56$, $8 \times 7 = 56$. What two division facts does this also show?



8. The boys have 49 chairs to put in rows for a class program. There is room for 7 rows of chairs. To find how many chairs they should put in each row, divide 49 by 7. $49 \div 7 = ?$ What multiplication fact goes with this division fact?

9. Ellen's father treated Ellen and 8 of her friends to ice cream cones. The cones cost 7¢ apiece. To find how much he paid, you can add nine 7's, or you can multiply. $9 \times 7¢ = ?¢$. The picture also shows that $63¢ \div 9 = 7¢$, the cost of each cone, and that $63¢ \div 7¢ = 9$, the number of cones bought.

10. Don sold 7 small cabbages for 9¢ each. How much did he get for them? $7 \times 9¢ = ?¢$

Facts About 7

	1	2	3	4	5	6	7	8	9
7	7	14	21	28	35	42	49	56	63

See if you can use this table to find the multiplication and division facts about 7.

1. What is the product of 7×7? What division fact belongs with this multiplication fact?

$$49 \div 7 = ?$$

Find the following facts that belong together.

2. $7 \times 9 = ?$ $9 \times 7 = ?$ $63 \div 9 = ?$ $63 \div 7 = ?$

3. $7 \times 8 = ?$ $8 \times 7 = ?$ $56 \div 8 = ?$ $56 \div 7 = ?$

4. Use the table to find five 7's. What two multiplication facts does the 35 show? What two division facts?

5. Use the table to find how many 7's there are in 42. What two division facts does the 42 show? What two multiplication facts go with these division facts?

6. What four multiplication and division facts does the 28 in the table show?

Copy and finish these multiplication facts about 7.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
7.	7	7	7	1	7	5	7	4
	2	8	6	7	3	7	9	7
	___	___	___	___	___	___	___	___
8.	7	3	7	9	7	6	7	8
	5	7	1	7	7	7	4	7
	___	___	___	___	___	___	___	___

Copy and finish these division facts about 7.

	a	b	c	d	e
9.	$7\overline{)42}$	$7\overline{)63}$	$4\overline{)28}$	$7\overline{)56}$	$3\overline{)21}$
10.	$7\overline{)28}$	$7\overline{)7}$	$7\overline{)35}$	$6\overline{)42}$	$7\overline{)49}$
11.	$7\overline{)14}$	$9\overline{)63}$	$5\overline{)35}$	$1\overline{)7}$	$8\overline{)56}$

12. Write a multiplication fact, using the three numbers, 7, 7, and 49.

13. Write two multiplication facts, using 7, 9, and 63.

14. Write two division facts, using 7, 9, and 63.

15. Write four multiplication and division facts, using 7, 8, and 56.

Copy and write the missing numbers.

	a	b	c
16.	$7 \times 8 = ?$	$9 \times 7 = ?$	$7 \times 7 = ?$
17.	$6 \times 7 = ?$	$5 \times 7 = ?$	$7 \times 9 = ?$
18.	$8 \times 7 = ?$	$7 \times 6 = ?$	$7 \times 5 = ?$
19.	$21 \div 7 = ?$	$42 \div 7 = ?$	$56 \div 7 = ?$
20.	$49 \div 7 = ?$	$7 \div 7 = ?$	$63 \div 7 = ?$
21.	$35 \div ? = 7$	$28 \div 7 = ?$	$35 \div 7 = ?$
22.	$63 \div ? = 7$	$42 \div ? = 7$	$56 \div ? = 7$

To find one seventh ($\frac{1}{7}$) of a number, divide by 7.

Copy and finish these examples.

23.	$\frac{1}{7}$ of $21 = ?$	$\frac{1}{7}$ of $63 = ?$	$\frac{1}{7}$ of $49 = ?$
24.	$\frac{1}{7}$ of $56 = ?$	$\frac{1}{7}$ of $7 = ?$	$\frac{1}{7}$ of $28 = ?$

Pages 278 and 279 provide enrichment material which can be used after this page.

Finding Costs

These are multiplication and division quickies. Just tell the answers, or write them on your paper. Which process did you use each time?

1. Dick paid 48 cents for 6 little boxes of nails. How much did each box cost?

2. Sally has a quarter to spend for apples. The apples she wants cost 5¢ apiece. How many apples can Sally buy?

3. Allen wanted extra copies of some pictures. He paid 40 cents to have 5 pictures printed. How much did it cost him for each picture?

4. Jill needs nine 3-cent stamps to mail some Christmas cards. How much will the stamps cost?

5. How many 2-cent marbles can Bill buy for a dime?

6. Linda bought half a dozen 5-cent valentines. How much did she pay for all of them?

7. At a sale, Mrs. Lane bought 6 cans of milk for 54 cents. How much did she pay for each can?

8. Don sold 8 big early tomatoes from his garden for 56 cents. How much, on the average, did Don get for each tomato?

9. Yesterday Don sold half a dozen bunches of radishes for 42 cents. How much a bunch did he get for the radishes?

10. Some bananas cost 9 cents apiece. How much will I have to pay for a half dozen of them?

11. Five people went on a trip. The trip cost $30. If the people shared the cost equally, how much did each one pay?

12. Bill bought an ice cream cone for each of the 9 boys on his baseball team. The cones cost 6¢ each. How much did Bill pay for all the cones?

13. Ann has 63 cents to spend for paper dolls. How many 7-cent paper dolls can she buy? How many 9-cent dolls could she buy?

14. Bob wants to save $6 a month. If he saves this much, how much money will he save in half a year?

15. Instead of $6, Bob saved only $4 a month for six months. How much did he save in all?

16. Four boys bought some cookies. The cookies cost 32 cents. How much did each boy pay?

Do You Multiply or Divide?

Do you know when to multiply and when to divide in finding the cost? See if you can answer these questions.

1. To find the *total cost* of several things at the same price, do you multiply or divide?

2. To find *how many* you can buy, if you know how much each one costs and how much money you have, do you multiply or divide?

3. To find *the cost of each thing,* if you know the total cost of several things and they are all alike, do you multiply or divide?

Keeping Up With Multiplication

These examples will help you remember what you have had in multiplication so far.

Copy and multiply. Check by going over your work.

	a	b	c	d	e	f
1.	67 × 5	12 × 6	86 × 7	49 × 4	56 × 3	67 × 7
2.	134 × 7	509 × 2	223 × 6	285 × 7	138 × 4	929 × 5
3.	135 × 6	457 × 3	596 × 7	389 × 5	175 × 7	390 × 4
4.	\$ .47 × 7	\$1.28 × 7	\$6.54 × 6	\$7.46 × 5	\$8.37 × 4	\$3.49 × 3

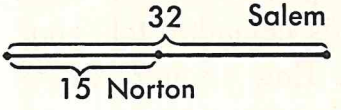
Keeping Up With Division

Do you remember the division you have had? Copy these examples, divide, and check.

	a	b	c	d
1.	$7\overline{)497}$	$7\overline{)630}$	$6\overline{)426}$	$5\overline{)400}$
2.	$6\overline{)366}$	$7\overline{)567}$	$4\overline{)364}$	$3\overline{)186}$
3.	$5\overline{)300}$	$7\overline{)420}$	$5\overline{)455}$	$6\overline{)480}$
4.	$7\overline{)\$4.90}$	$2\overline{)\$1.48}$	$7\overline{)\$2.10}$	$6\overline{)\$3.00}$
5.	$7\overline{)\$35.70}$	$7\overline{)\$28.07}$	$6\overline{)\$54.60}$	$3\overline{)\$21.30}$

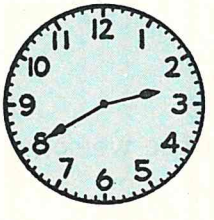
Using Pictures To Solve Problems

Sometimes using a picture or drawing will help you understand what to do to solve a problem.



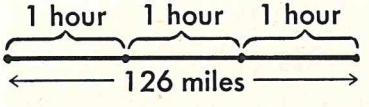
1. Tony saw a sign post which said that Norton was 15 miles ahead and Salem was 32 miles ahead. He wanted to know how far it was from Norton to Salem. Does the drawing help you see whether you add or subtract? How far is it from Norton to Salem?

2. One cold winter day the thermometer read 8° below zero when Sam got up. In the afternoon, the temperature was 12° above zero. Does the picture help you understand whether you add or subtract to find how much warmer it got? How many degrees warmer was it in the afternoon?



3. Our puppet show started at 2:40. It ended at 3:05. Use the clock to help you find how many minutes the show lasted.

4. We drove 126 miles in 3 hours. Look at the line. How many miles an hour did we average?



5. If we average 36 miles an hour, how many miles will we go in 4 hours? Draw a line to show this.

Using a Calendar

February, 1954						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

1. Look at the calendar at the left. Is 1954 a leap year? How does this calendar tell you?

2. How many weeks does this calendar show for February?

3. On this calendar, February first comes on what day of the week?

4. On what day of the week is Feb. 28?

5. On what day of the week is Washington's Birthday on this calendar?

6. On this calendar, what days in February are Saturdays?

7. Ann's vacation last summer lasted 63 days. How many weeks are 63 days?

8. What is the first day of the week?

9. What is the last day of the week?

10. What day is exactly in the middle of the week?

11. What is the first month of the year?

12. What is the last month of the year?

13. What is the fifth month of the year?

14. What month of the year is March?

15. What is the month and day of your birthday?

16. In what year were you born?

Which Measure Is More?

On your paper, write the measure, in each example, which is more than the other measure.

1. 1 foot or 11 inches
2. 1 yard or 40 inches
3. 1 year or 9 months
4. 1 week or 9 days
5. $\frac{1}{2}$ dozen or 5 eggs
6. $\frac{1}{4}$ foot or 4 inches
7. 1 quart or 3 pints
8. $\frac{1}{2}$ year or 7 months
9. $\frac{1}{2}$ hour or $\frac{1}{4}$ hour
10. 1 minute or 58 seconds
11. $\frac{1}{3}$ foot or 3 inches
12. 1 pound or 15 ounces
13. $\frac{1}{4}$ pound or 6 ounces
14. $\frac{1}{2}$ gallon or 3 quarts
15. 1 gallon or 3 quarts
16. $\frac{1}{2}$ hour or 20 minutes
17. $\frac{1}{4}$ hour or 20 minutes
18. 1 quarter or 4 nickels

Larger and Smaller Measures

To measure length, several measures are used. Some of these measures are larger than others. A yard is a larger measure than an inch. A mile is larger than a yard. To measure time, a year is a larger measure than a month.

Write the larger measure in each example.

1. A yard or a foot
2. A day or a week
3. A pound or an ounce
4. A quart or a pint
5. A quart or a gallon
6. A minute or a second
7. A week or a month
8. A dime or a nickel

Write the smaller measure in each example.

9. A glass or a quart
10. A nickel or a cent
11. An inch or a foot
12. An hour or a day
13. A quarter or a dime
14. A dozen or a pair

Changing Measures

Here are some quickies. In each one, you have to change a measure to a larger or smaller measure.

1. Bob and Sue made 2 gallons of ice cream for their party. How many quarts of ice cream did they make?

2. Barbara spent 21 days in the country with her grandmother. How many weeks was she there?

3. Dick has a board 3 feet long. How many inches long is it?

4. Dick has another board 9 feet long. How many yards long is it?

5. Jean wants to change 8 nickels into dimes. How many dimes should she get?

6. How many nickels should Tom get for two quarters?

7. Tom's mother said, "Tom, I just mended 14 socks for you." How many pairs of socks was this?

8. The Lanes went to the mountains for 3 weeks last summer. How many days was this?

9. Sally bought 2 dozen little cakes for her mother. How many cakes did she buy?

10. Peggy and some of her friends took a two-hour horseback ride. How many minutes did they ride?

11. Sue measured 6 pints of milk for cocoa. How many quarts was this?

12. Don's father put 9 quarts of raspberries into pint boxes. How many pints did this make?

13. If Ann changes a half dollar into dimes, how many dimes will she get?

14. Ann's little sister Kathy has 15 pennies that she wants to change into nickels for her nickel bank. How many nickels will she get for 15 pennies?

15. Ellen made a quart pitcher full of lemonade. How many pints was this? If one pint is about 2 glasses, how many glasses of lemonade did Ellen make?

16. Bob has a 12-quart pail. How many gallons does the pail hold?

Copy these examples and fill in the missing numbers.

17. 6 ft. = ? yd.

18. 2 nickels = ?¢

19. 8 qt. = ? gal.

20. 4 qt. = ? pt.

21. 2 wk. = ? da.

22. 10 pt. = ? qt.

23. 2 ft. = ? in.

24. 3 yd. = ? ft.

25. 21 da. = ? wk.

26. 2 gal. = ? qt.

27. 2 lb. = ? oz.

28. 8 dimes = ? nickels

29. In which of the examples above did you change larger measures to smaller measures? To change larger measures to smaller measures, do you *multiply* or do you *divide?*

30. In which examples did you change smaller measures to larger measures? To change smaller measures to larger measures, do you *multiply* or do you *divide?*

Pages 280 and 281 provide enrichment material which can be used after this page.

Jerry's Stamps

In these problems, you will use all four processes. In each problem, decide whether you will add, subtract, multiply, or divide. Then solve the problem on another paper. Can you work any of the problems as quickies?

1. Jerry collects stamps. He has two books for his stamps. He has 805 stamps in the large book and 128 stamps in the small book. How many more stamps does he have in the large book than in the small one?

2. Jerry has 389 United States stamps and 544 stamps from other countries. How many stamps has he in all?

3. Jerry has 90¢ to spend for stamps. How many can he buy if the stamps he wants cost 3 cents apiece?

4. Jerry told his father he had 27 Mexican stamps and twice as many Canadian stamps. How many Canadian stamps did he have?

5. Jerry had 27 Cuban stamps. Then his father gave him 9 more. How many Cuban stamps did Jerry have then?

6. Jerry's father bought a package of 150 stamps. He kept 92 of these stamps and gave the rest to Jerry. How many stamps did Jerry get?

7. How much will Jerry have to pay for 46 stamps costing 2¢ each?

8. Jerry likes to trade stamps. He keeps his trading stamps in his little book. There are 6 pages for United States stamps. Each page has room for 28 stamps. How many United States stamps can Jerry put in his little book?

9. Jerry wants to put 48 stamps into little packages for trading. If he puts 8 stamps in each package, how many packages will he have?

10. Jerry bought a packet of 7 stamps for 35 cents. On the average, how much did he pay for each stamp?

11. Jerry had 42 French stamps in his trading book. He traded some of them to Dave, and had 28 French stamps left in his trading book. How many of the stamps had he traded to Dave?

12. Last year, Jerry got 488 new stamps in all. He got half of these by trading. How many stamps did Jerry get by trading, last year?

Facts About 8

	1	2	3	4	5	6	7	8	9
8	8	16	24	32	40	48	56	64	72

This table shows all the multiplication and division facts about 8. You have already had all these facts except those shown by the 64 and 72.

1. What is the product of 8 × 8? What division fact belongs with this multiplication fact?

2. What is the product of 8 × 9? What other multiplication fact goes with this? What two division facts belong with these two multiplication facts?

3. Use the table to find six 8's. What two multiplication facts does the 48 show? What two division facts?

4. From the table, find how many 8's there are in 56. What two division facts does the 56 show? What two multiplication facts belong with these division facts?

5. What four multiplication and division facts does the 40 in the table show?

Copy and finish these multiplication facts about 8.

	a	*b*	*c*	*d*	e	*f*	*g*	*h*
6.	8	3	8	1	8	9	2	8
	8	8	6	8	7	8	8	3
7.	8	5	7	8	8	8	6	4
	4	8	8	2	5	9	8	8

Copy and finish these division facts about 8.

	a	b	c	d	e
8.	$5\overline{)40}$	$8\overline{)56}$	$8\overline{)8}$	$2\overline{)16}$	$7\overline{)56}$
9.	$8\overline{)72}$	$8\overline{)40}$	$4\overline{)32}$	$9\overline{)72}$	$8\overline{)24}$
10.	$8\overline{)48}$	$1\overline{)8}$	$8\overline{)32}$	$6\overline{)48}$	$8\overline{)64}$

11. Write a multiplication fact using the three numbers 8, 8, and 64. Write a division fact with these numbers.

12. Write two multiplication facts using 8, 9, and 72.

13. Write two division facts with 8, 9, and 72.

14. Write four multiplication and division facts with 6, 8, and 48.

Copy and write the missing numbers.

	a	b	c
15.	$8 \times 6 = ?$	$5 \times 8 = ?$	$8 \times 9 = ?$
16.	$4 \times 8 = ?$	$8 \times 2 = ?$	$7 \times 8 = ?$
17.	$8 \times 8 = ?$	$8 \times 7 = ?$	$3 \times 8 = ?$
18.	$64 \div 8 = ?$	$72 \div 9 = ?$	$56 \div 8 = ?$
19.	$48 \div 6 = ?$	$40 \div 8 = ?$	$32 \div 8 = ?$
20.	$72 \div 8 = ?$	$40 \div 5 = ?$	$48 \div 8 = ?$

To find one eighth ($\frac{1}{8}$) of a number, divide by 8.

21.	$\frac{1}{8}$ of $48 = ?$	$\frac{1}{8}$ of $72 = ?$	$\frac{1}{7}$ of $56 = ?$
22.	$\frac{1}{5}$ of $40 = ?$	$\frac{1}{6}$ of $30 = ?$	$\frac{1}{8}$ of $40 = ?$
23.	$\frac{1}{8}$ of $56 = ?$	$\frac{1}{8}$ of $64 = ?$	$\frac{1}{6}$ of $48 = ?$

Using 8's in Problems

A good way to check your work in solving problems is to see whether your answer makes sense. If it looks too large or too small, you may have used the wrong process or done something else wrong.

After each of these quickies are three answers. One is correct. The other two do not make sense. Pick out the correct answer and tell which process was used to get this answer.

1. If Jean saves 8 cents a day, how many days will it take her to save 24 cents for a painting book?

(32 or 3 or 16)

2. Jean is putting pictures of animal homes on the display board. She has room for 2 rows of pictures with 8 pictures in each row. How many pictures can she put up? (16 or 10 or 4)

3. How many arm bands 8 inches long can be cut from a strip of cloth 48 inches long? (6 or 40 or 56)

4. Sally paid 56 cents for 8 tomatoes. On an average, how much was this apiece for the tomatoes?

(48¢ or 7¢ or $4.48)

5. Our school bus used 8 gallons of gasoline to go 72 miles. On an average, how many miles did it go on each gallon? (64 or 80 or 9)

6. Jill is putting 40 roses in 5 equal bunches. How many roses should she put in each bunch?

(35 or 8 or 200)

7. Jill must cut enough tulips to make 8 bunches with 6 tulips in each bunch. How many tulips must Jill cut? (14 or 48 or 2)

8. If I buy 8 three-cent stamps at the post office, how much will they cost? (11¢ or 24¢ or 5¢)

9. Sue is putting 24 peppermint candies on waxed paper. She can get 3 rows on the paper. How many candies should go in each row? (29 or 72 or 8)

10. Our school cafeteria has 16 cakes for lunch. If each cake is cut into 8 pieces, how many pieces will there be to sell? (24 or 128 or 2)

11. Sally buys half a dozen grapefruit at 8 cents apiece. How much do they cost? (14¢ or 48¢ or 2¢)

12. Tom wants to change 8 nickels into dimes. How many dimes should he get? (80 or 16 or 4)

13. At a sale, Mrs. Lane could get 8 cans of soup for a dollar. She bought 4 dollars' worth. How many cans did she get? (12 or 32 or 2)

14. Sue and her mother are canning three gallons of tomato juice. If they use pint jars, how many jars of juice will they have? (11 or 5 or 24)

15. Ellen is giving a George Washington party. If she buys 9 cherry tarts at 8 cents apiece, how much will they cost? (72¢ or 64¢ or $1.44)

16. Don sold 8 small heads of cabbage at his father's roadside stand. He got 64 cents for the cabbage. How much, on an average, did he get for each head? (72¢ or 8¢ or 56¢)

Keeping Up With Multiplication

The examples on this page will help you brush up on your multiplication. Do you know the multiplication facts you have had so far?

Copy and multiply. Check each example by going over your work.

	a	b	c	d	e	f
1.	69 × 8	56 × 3	86 × 7	98 × 8	43 × 6	68 × 4
2.	72 × 5	20 × 7	74 × 8	57 × 2	49 × 5	90 × 3
3.	83 × 8	69 × 6	82 × 3	26 × 7	60 × 2	39 × 4
4.	49 × 3	60 × 8	95 × 5	58 × 6	58 × 4	84 × 7
5.	124 × 4	321 × 5	112 × 6	175 × 8	354 × 7	173 × 3
6.	257 × 6	270 × 8	304 × 4	179 × 7	413 × 5	763 × 3
7.	\$ .38 × 8	\$ .75 × 4	\$ .80 × 6	\$ .98 × 2	\$ .68 × 5	\$ .76 × 6
8.	\$1.45 × 8	\$1.29 × 4	\$6.08 × 5	\$4.37 × 7	\$9.04 × 6	\$2.99 × 8

	a	b	c
9.	8 × 59	6 × 490	7 × 169
10.	6 × \$.75	8 × \$1.70	5 × \$7.04

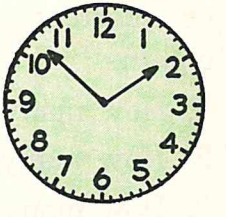
Keeping Up With Division

Copy and divide. Check by multiplying.

	a	b	c	d	e
1.	$8\overline{)328}$	$8\overline{)480}$	$7\overline{)497}$	$8\overline{)560}$	$7\overline{)567}$
2.	$5\overline{)300}$	$7\overline{)427}$	$7\overline{)280}$	$8\overline{)168}$	$6\overline{)546}$
3.	$4\overline{)248}$	$8\overline{)6408}$	$6\overline{)4206}$	$7\overline{)6370}$	$4\overline{)2808}$
4.	$6\overline{)\$3.06}$	$8\overline{)\$4.00}$	$7\overline{)\$21.70}$	$8\overline{)\$72.80}$	$7\overline{)\$35.07}$
5.	$8\overline{)\$2.48}$	$7\overline{)\$3.57}$	$8\overline{)\$64.80}$	$6\overline{)\$48.66}$	$5\overline{)\$20.05}$

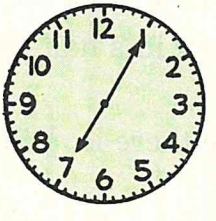
Can You Tell Time?

1. The clock at the right shows 1:52. How many minutes of 2 does it show?

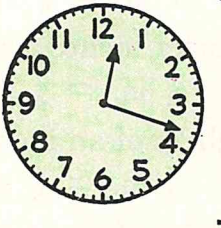


On your paper, write in two ways the time each of these clocks shows.

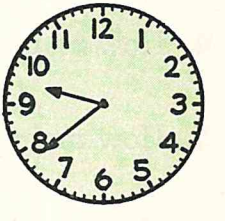
2.



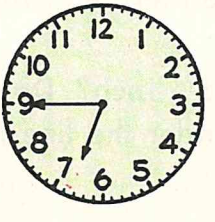
3.



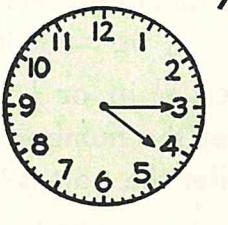
4.



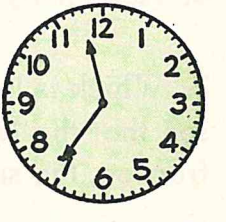
5.



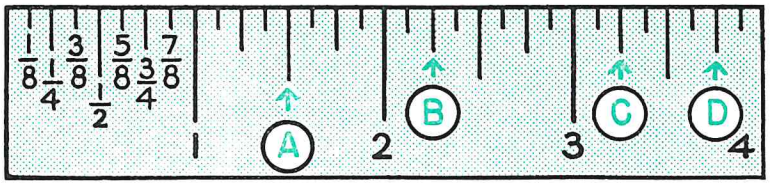
6.



7.



Using a Ruler



You already know that a *fraction* is a *part*.

On a ruler, inches are usually divided into fractions such as halves, fourths, and eighths.

The picture above shows fractions of an inch. The line marked $\frac{1}{2}$ shows how the inch is divided into halves. The lines marked $\frac{1}{4}$ and $\frac{3}{4}$ show fourths, or quarters of an inch. The shortest lines show eighths.

1. How many half inches are there in one inch?
2. How many quarter inches are there in an inch?
3. How many eighth inches are there in an inch?

   1 in. $= \frac{2}{2}$ in. 1 in. $= \frac{4}{4}$ in. 1 in. $= \frac{8}{8}$ in.

4. How many quarter inches are there in a half inch?

   $\frac{1}{2}$ in. $= \frac{2}{4}$ in.

5. How many eighths of an inch are there in $\frac{1}{2}$ inch?

   $\frac{1}{2}$ in. $= \frac{4}{8}$ in.

6. How many eighths of an inch are there in $\frac{1}{4}$ inch?

   $\frac{1}{4}$ in. $= \frac{2}{8}$ in.

7. Which is longest, $\frac{1}{8}$ in. or $\frac{1}{4}$ in. or $\frac{1}{2}$ inch? **Do you see that the larger the number is under the line in a fraction, the smaller the part is?**

8. Look at the picture of the ruler on page 122. Arrow A points to $1\frac{1}{2}$ in. (one and one half inches). Arrow B points to $2\frac{1}{4}$ inches. Where does Arrow C point? Where does Arrow D point?

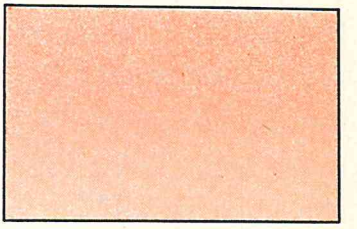
9. The picture shows 4 inches on a foot ruler. Is this $\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{4}$ of a foot?

10. Can you count by quarter inches on the ruler? Start $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and count to 3 inches.

11. Count by $\frac{1}{8}$ inches. Start $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ and count to 2 inches.

You often use parts of an inch in sawing boards, knitting, sewing, and many other activities in which you have to measure things.

12. Measure this line to the nearest half inch.



13. Measure the length of the rectangle to the nearest fourth of an inch.

14. Measure the width of the rectangle to the nearest eighth of an inch.

15. Here is one of Jerry's stamps. Measure the length and width of this stamp (its *dimensions*) to the nearest eighth of an inch.

16. Measure the length and width of the cover of this book to the nearest quarter inch.

Problems in Pairs

Here are some more problems in pairs. In each pair, you must find the answer to the first problem before you can do the second problem. Can you do any of these problems as quickies?

1a. For his birthday, Tom got 8 pieces of track for his electric train. Each piece was 12 in. long. How many inches of track did Tom get?

1b. Tom already had 168 in. of track. After his birthday, how many inches did he have?

2a. Don has 2 rows of cabbages in his garden. There are 18 heads of cabbage in one row and 17 in the other. How many heads of cabbage does Don have in his garden?

2b. If Don sells his cabbages for 8 cents a head, how much money will he get?

3a. Ellen needs 17 little bells for her Halloween dress and 5 bells for the hat. How many bells does she need in all?

3b. The bells cost 3 cents each. How much will Ellen have to pay for all the bells on her Halloween costume?

4a. Sue made a pan of fudge. She cut it into 4 rows with 10 pieces in each row. How many pieces of fudge did Sue make?

4b. Sue kept 12 pieces of fudge and gave away the rest. How many pieces did she give away?

5a. Allen bought 3 films costing 48 cents each. What did the 3 films cost Allen?

5b. Allen gave the clerk two dollars. How much change did he get back?

6a. Peggy bought 3 tennis balls costing 55¢ each. How much did the three balls cost?

6b. Peggy also bought a tennis racket for $3.89. Find the total cost of the racket and balls.

7a. Linda bought 15 cents' worth of jelly beans. They were 2 for a cent. How many jelly beans did she buy?

7b. Linda shared the jelly beans with 4 other girls. How many did each of the 5 girls get?

8a. Bill went bowling. In three games he made 55, 68, and 87. What was his total score for the three games?

8b. What was Bill's average score per game?

9a. Jerry saw his mother put six 3-cent stamps on a package. How much did these stamps cost?

9b. Then his mother put a 15-cent stamp on the package. How much did all the postage cost?

10a. Bill was riding on a city bus. When he got on the bus, there were 24 people in the bus including Bill. At the next stop 5 people got off. How many people were in the bus then?

10b. At the next stop, 3 people got in the bus and no one got out. How many people were there then?

Page 282 provides enrichment material which can be used after this page.

Can You Work With Numbers?

Diagnostic Check Test 2A

This test will show you how much you have learned about the four processes. Work carefully. Make sure your answers are right.

Copy and add. How do you check your work?

	a	*b*	*c*	*d*	e
1.	47	869	376	70	$5.00
	64	986	94	950	8.68
	39	547	212	864	.52
	56	330	708	439	2.95

Copy and subtract. How do you check?

2.	138	706	421	$2.50	$10.00
	83	628	93	.97	5.98

Copy and multiply. Check by doing the examples again on another paper.

3.	70	68	159	$ .76	$2.09
	6	8	6	5	7

Copy and divide. How do you check?

	a	*b*	*c*	*d*
4.	$3\overline{)906}$	$7\overline{)497}$	$2\overline{)1068}$	$8\overline{)\$4.00}$

Copy and work these examples.

	a	*b*	*c*
5.	148 + 9 + 98 + 208	$\frac{1}{6}$ of 246	7 × $.58
6.	$5 + $3.47 + 83¢	$8 − $7.06	$\frac{1}{8}$ of $7.28

Do You Understand Numbers?

Diagnostic Check Test 2B

This test will show you how much you know about what numbers mean.

1. How many days are there in 3 weeks?
2. Six feet equals how many yards?
3. How much is seven 8's?
4. How many 5's are there in 40?
5. What month is the third month of the year?
6. What month of the year is July?
7. What month of the year is October?
8. $6 \times ? = 48$.
9. $42 \div ? = 7$.
10. What number is twice as large as 6?
11. Half of 24 is what number?
12. 6:35 means how many minutes to 7?
13. \$3.64 means ? dollars, ? dimes, ? cents.
14. $\frac{1}{6}$ dozen eggs equals how many eggs?
15. Which is more, $\frac{1}{3}$ dozen or $\frac{1}{4}$ dozen?
16. Which is longer, $\frac{1}{8}$ inch or $\frac{1}{4}$ inch?
17. What measure is $\frac{1}{3}$ yard?
18. What measure is a quarter of a gallon?
19. In the number 2643, which figure means hundreds?
20. What number is 3 times as large as 9?
21. What number is 8 more than 12?
22. What number is 7 less than 35?
23. Which measure is larger, 10 oz. or $\frac{1}{2}$ lb.?

Can You Use Numbers?

Diagnostic Check Test 2C

The test on these two pages will show you how well you can use numbers in problems. Decide which process you are to use in each problem, and then find the answer.

1. In four weeks, Bob's father spent $20.80 for gasoline. How much did he spend for gasoline each week on an average?

2. Last year Jim weighed 65 pounds. This year he weighs 72 pounds. How many pounds has he gained since last year?

3. Sixty-seven boys and 58 girls saw our school play. How many pupils saw the play?

4. Bill and Ann bobbed for apples at Halloween. It took Bill just a minute to get his apple. Ann got hers in only 48 seconds. How many seconds less than Bill did Ann take?

5. Nora has a set of 3 books about birds. There are 150 pages in each book. How many pages are there in all three books?

6. Jean and her family are going on a 240-mile automobile trip. They want to make the trip in 8 hours. How many miles an hour must they average?

7. On this 240-mile trip, the family plans to eat lunch when they have gone 95 miles. How many miles will they have to drive after lunch?

8. Don has 4 rows of corn in his garden. He picks an average of 48 ears of corn from each row. How many ears of corn will he get in all?

9. There are 132 pages in Jill's book. If Jill has read 75 pages, how many more pages does she have to read?

10. Ellen's mother took Ellen to the movies. She paid 35 cents for Ellen's ticket and 65 cents for her own. How much did she pay for both tickets?

11. On a 208-mile trip, how many miles must we drive before we will be half way?

12. Jerry had 87 United States stamps in his trading book. Then he put 15 more United States stamps in the book. How many United States stamps did he have in the book then?

13. Chapter V in Nora's book begins on page 96. Chapter VI starts on page 104. How many pages are there in Chapter V?

14a. Joe practiced on his trumpet 18 minutes on Thursday, 15 minutes on Friday, and 30 minutes on Saturday. How many minutes did he practice in three days?

14b. On an average, how many minutes a day did Joe practice?

15a. Don sold 3 baskets of peaches for $1.25 a basket. What was the total cost of the peaches?

15b. Don's customer paid for the peaches with a five-dollar bill. How much change did Don give him?

Facts About 9

	1	2	3	4	5	6	7	8	9
9	9	18	27	36	45	54	63	72	81

1. This table shows all the multiplication and division facts about 9. You have already had all these facts except two. Can you find in the table the product of 9×9? What division fact belongs with this multiplication fact?

2. What is the product of 9×7? What other multiplication fact goes with this? What two division facts belong with these multiplication facts?

3. What is the quotient of $54 \div 9$? What other division fact goes with this? What two multiplication facts belong with it?

4. How many 9's are there in 72?

5. How much is four 9's?

6. How many 9's are there in 45?

7. How much is $9 \div 1$? $9 \div 9$? 1×9? 9×1?

Copy and finish these multiplication facts about 9.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
8.	2 9	9 1	5 9	9 6	9 9	9 7	9 8	9 5
9.	9 4	8 9	9 3	4 9	7 9	9 2	6 9	3 9

Copy and finish these division facts.

	a	b	c	d	e
10.	$9\overline{)54}$	$5\overline{)45}$	$9\overline{)18}$	$9\overline{)81}$	$4\overline{)36}$
11.	$9\overline{)27}$	$9\overline{)72}$	$3\overline{)27}$	$9\overline{)45}$	$2\overline{)18}$
12.	$6\overline{)54}$	$9\overline{)36}$	$9\overline{)9}$	$8\overline{)72}$	$9\overline{)63}$

13. Write a multiplication fact and a division fact using the three numbers 9, 9, and 81.

14. Write two multiplication facts with 9, 7, and 63.

15. Write two division facts with 9, 7, and 63.

16. Write four multiplication and division facts with 6, 9, and 54.

To find one ninth ($\frac{1}{9}$) of a number, divide by 9.

Copy and finish these examples.

	a	b	c
17.	$\frac{1}{9}$ of 36 = ?	$\frac{1}{9}$ of 63 = ?	$\frac{1}{9}$ of 54 = ?
18.	$\frac{1}{9}$ of 72 = ?	$\frac{1}{9}$ of 81 = ?	$\frac{1}{9}$ of 45 = ?

Copy and write the missing numbers.

19.	$9 \times 5 = ?$	$7 \times 9 = ?$	$9 \times 9 = ?$
20.	$4 \times 9 = ?$	$9 \times 8 = ?$	$9 \times 2 = ?$
21.	$9 \times 7 = ?$	$9 \times 6 = ?$	$9 \times 1 = ?$
22.	$9 \times ? = 36$	$9 \times ? = 63$	$9 \times ? = 72$
23.	$54 \div 6 = ?$	$72 \div 8 = ?$	$81 \div 9 = ?$
24.	$45 \div 9 = ?$	$63 \div 9 = ?$	$72 \div 9 = ?$

Quickies About 9

Number your paper 1 to 13. Write **M** after a number if you multiply in that problem. Write **D** if you divide. Then write the answer to the problem.

1. Sue wants to bake 36 cookies on a cookie sheet. She can get 4 rows of cookies across the sheet. How many cookies must she put in each row?

2. How many raisins will Sue need for 9 gingerbread men, if she uses 7 raisins for each man?

3. Forty-five children want to go to a "play day" in another school. How many cars will be needed to take them, if 5 children can go in each car?

4. Four teams are playing softball on the school playground. There are 9 boys on each team. How many boys are playing softball?

5. Bob has 27 eggs to sell to 3 customers. If each one gets the same number, how many will each get?

6. Sam's teacher gave the fourth grade 9 new boxes of colored crayons. There were 8 crayons in each box. How many crayons were there in all?

7. Don picked 9 boxes of raspberries in an hour. At that rate, how many boxes could be picked in 6 hours?

8. Jim and Barbara are putting up pictures on the display board. They have 27 pictures of the same size. If they put 9 pictures in each row, how many rows will they have?

9. Linda bought 9 cents' worth of gumdrops. She counted the gumdrops and found that she had 18. How many gumdrops did she get for a cent?

10. Ann has 72 postcards. How many pages in her scrap book will they fill, if she can get 8 cards on a page?

11. Sally's mother paid 81 cents for 9 pounds of apples. How much a pound were the apples?

12. During the school year, Nora plans to read 9 library books a month. In 9 months, how many books will she read?

13. We have 63 chairs to put in 7 equal rows. How many chairs should we put in each row?

Do You Multiply or Divide?

Do you know when to multiply and when to divide in problems about equal groups? See if you can answer these questions.

1. You know how many equal groups there are, and how many things in each group. To find *the total number* of things in all the groups, do you *multiply* or *divide?*

2. You know how many things there are in all, and how many in each group. To find *the number of groups,* do you *multiply* or *divide?*

3. You know how many there are in all, and how many groups there are. To find *the number in each group,* do you *multiply* or *divide?*

Page 283 provides enrichment material which can be used after this page.

Do You Know Multiplication Facts?

You have now had all the multiplication facts. This page will help you find out whether you really know them. Learn any facts you are not sure of.

Copy and finish these multiplication facts.

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*
1.	5 × 9 =	4 × 4 =	4 × 2 =	5 × 5 =	6 × 5 =	9 × 1 =	3 × 3 =	7 × 7 =
2.	9 × 4 =	2 × 2 =	8 × 1 =	3 × 2 =	4 × 7 =	9 × 6 =	8 × 4 =	4 × 9 =
3.	1 × 2 =	8 × 5 =	2 × 9 =	9 × 5 =	6 × 7 =	8 × 6 =	3 × 8 =	7 × 2 =
4.	5 × 3 =	8 × 2 =	2 × 3 =	6 × 8 =	9 × 9 =	6 × 1 =	5 × 4 =	9 × 7 =
5.	7 × 6 =	8 × 8 =	6 × 6 =	8 × 3 =	2 × 6 =	3 × 7 =	1 × 5 =	3 × 9 =
6.	1 × 8 =	9 × 8 =	3 × 6 =	5 × 7 =	2 × 8 =	7 × 4 =	3 × 5 =	5 × 8 =
7.	6 × 2 =	2 × 7 =	9 × 2 =	4 × 6 =	6 × 3 =	2 × 4 =	6 × 9 =	9 × 3 =
8.	3 × 4 =	4 × 5 =	2 × 5 =	7 × 3 =	5 × 6 =	8 × 7 =	4 × 3 =	7 × 5 =
9.	7 × 8 =	1 × 9 =	6 × 4 =	4 × 8 =	8 × 9 =	5 × 2 =	3 × 1 =	7 × 9 =

Making Sure of Division Facts

Here are most of the division facts. If there are any you are not sure of, master them.

Copy and finish these division facts.

	a	*b*	*c*	*d*	*e*	*f*
1.	$9\overline{)63}$	$5\overline{)35}$	$2\overline{)14}$	$8\overline{)72}$	$7\overline{)49}$	$4\overline{)20}$
2.	$3\overline{)18}$	$8\overline{)32}$	$9\overline{)18}$	$7\overline{)35}$	$6\overline{)24}$	$8\overline{)40}$
3.	$5\overline{)45}$	$1\overline{)7}$	$7\overline{)56}$	$4\overline{)24}$	$6\overline{)48}$	$9\overline{)54}$
4.	$6\overline{)36}$	$6\overline{)12}$	$7\overline{)14}$	$4\overline{)32}$	$8\overline{)24}$	$3\overline{)24}$
5.	$8\overline{)8}$	$6\overline{)54}$	$4\overline{)36}$	$3\overline{)9}$	$5\overline{)40}$	$6\overline{)30}$
6.	$5\overline{)30}$	$9\overline{)36}$	$6\overline{)18}$	$9\overline{)27}$	$3\overline{)21}$	$7\overline{)63}$
7.	$9\overline{)45}$	$2\overline{)16}$	$9\overline{)72}$	$7\overline{)28}$	$8\overline{)56}$	$7\overline{)42}$
8.	$6\overline{)42}$	$3\overline{)15}$	$5\overline{)15}$	$4\overline{)28}$	$5\overline{)20}$	$8\overline{)16}$
9.	$3\overline{)27}$	$8\overline{)64}$	$5\overline{)25}$	$9\overline{)81}$	$2\overline{)18}$	$8\overline{)48}$

Write the answers.

	a	*b*	*c*	*d*
10.	$\frac{1}{6}$ of 42	$\frac{1}{4}$ of 36	$\frac{1}{8}$ of 56	$\frac{1}{5}$ of 30
11.	$\frac{1}{9}$ of 54	$\frac{1}{7}$ of 42	$\frac{1}{3}$ of 27	$\frac{1}{6}$ of 30
12.	$\frac{1}{7}$ of 56	$\frac{1}{5}$ of 40	$\frac{1}{8}$ of 72	$\frac{1}{9}$ of 63
13.	$\frac{1}{6}$ of 54	$\frac{1}{9}$ of 72	$\frac{1}{4}$ of 28	$\frac{1}{8}$ of 40
14.	$\frac{1}{9}$ of 81	$\frac{1}{7}$ of 49	$\frac{1}{6}$ of 36	$\frac{1}{4}$ of 32
15.	$\frac{1}{7}$ of 63	$\frac{1}{8}$ of 64	$\frac{1}{6}$ of 48	$\frac{1}{5}$ of 45

Practice in Multiplying

See if you can use the multiplication facts in multiplying larger numbers.

Remember: Any number × 0 = 0.

Copy and multiply. Check by going over your work or doing each example again on another paper.

	a	*b*	*c*	*d*	e
1.	59 × 9	27 × 5	83 × 6	39 × 4	52 × 8
2.	56 × 6	64 × 7	35 × 5	95 × 9	80 × 7
3.	98 × 5	62 × 6	76 × 8	19 × 7	59 × 4
4.	187 × 9	247 × 8	634 × 9	309 × 8	941 × 5
5.	259 × 7	608 × 5	710 × 9	517 × 6	680 × 9
6.	\$ .74 × 7	\$ .92 × 3	\$ .36 × 5	\$ .68 × 8	\$ .87 × 7
7.	\$1.93 × 8	\$5.47 × 3	\$4.09 × 6	\$1.84 × 8	\$5.47 × 3
8.	\$2.86 × 4	\$4.97 × 2	\$4.23 × 9	\$4.09 × 5	\$2.65 × 7

	a	*b*	*c*
9.	7 × 418	9 × 306	8 × 98
10.	5 × \$6.80	8 × \$2.75	9 × \$9.57

Practice in Dividing

Copy and divide. Check by multiplying.

	a	b	c	d	e
1.	$3\overline{)96}$	$4\overline{)84}$	$7\overline{)70}$	$9\overline{)630}$	$5\overline{)100}$
2.	$7\overline{)637}$	$8\overline{)408}$	$6\overline{)420}$	$3\overline{)126}$	$7\overline{)420}$
3.	$9\overline{)360}$	$5\overline{)405}$	$8\overline{)248}$	$6\overline{)300}$	$3\overline{)279}$
4.	$5\overline{)2005}$	$4\overline{)3648}$	$2\overline{)1626}$	$3\overline{)2103}$	$7\overline{)4900}$
5.	$9\overline{)5409}$	$5\overline{)4550}$	$8\overline{)4880}$	$6\overline{)5406}$	$5\overline{)3005}$

	a	b	c	d
6.	$9\overline{)\$\ .81}$	$4\overline{)\$2.80}$	$8\overline{)\$5.60}$	$4\overline{)\$3.24}$
7.	$3\overline{)\$1.59}$	$4\overline{)\$2.00}$	$2\overline{)\$18.40}$	$6\overline{)\$12.06}$
8.	$7\overline{)\$28.70}$	$8\overline{)\$72.88}$	$4\overline{)\$24.40}$	$9\overline{)\$27.90}$

Using Arithmetic Signs

Can you supply missing signs? Copy these examples and fill in the $+$, $-$, $\times$, or $\div$ that is missing.

	a	b	c
1.	$16 \,?\, 8 = 8$	$16 \,?\, 8 = 2$	$6 \,?\, 8 = 48$
2.	$9 \,?\, 5 = 45$	$9 \,?\, 5 = 14$	$7 \,?\, 7 = 1$
3.	$24 \,?\, 4 = 6$	$24 \,?\, 4 = 20$	$56 \,?\, 7 = 8$
4.	$63 \,?\, 7 = 9$	$15 \,?\, 5 = 20$	$15 \,?\, 5 = 3$
5.	$28 \,?\, 4 = 32$	$28 \,?\, 4 = 7$	$28 \,?\, 4 = 24$
6.	$27 \,?\, 9 = 3$	$27 \,?\, 9 = 18$	$27 \,?\, 9 = 36$

Can You Find the Mistakes?

See how good you are at finding mistakes in arithmetic work. Some of the answers on this page are correct and some are wrong. Number your paper 1 to 5. If the answer is right, write R after its number. If it is wrong, write the correct answer.

Find the sums.

	a	*b*	*c*	*d*	*e*
1.	879	927	67	318	$ 1.49
	47	198	43	164	.95
	68	67	80	276	3.50
	380	529	69	650	12.75
	56	208	75	807	6.38
	1430	1919	414	2215	$15.08

Find the remainders.

2.	812	102	639	$5.50	$7.00
	54	57	534	1.91	2.04
	768	145	95	$3.59	$5.06

Find the products.

3.	69	170	604	149	$ 3.75
	6	8	5	2	9
	416	1368	3020	298	$33.75

Find the quotients.

4.	41	81	80	342	521
	7)280	6)486	9)729	2)684	4)2084
5.	$ .5	$ .71	$ .80	$ .93	$ 7.01
	8)$ .40	7)$4.97	6)$5.40	3)$2.79	9)$63.09

Using a Timetable

Jim lives in Corbin City. He is going on the train to visit his grandmother in Jackson. Here is part of the timetable that tells about the train on which Jim is going to ride.

Train No. 56	
Corbin City	8:15
Mayville	9:00
Jackson	9:45

1. When is Jim's train (Number 56) supposed to leave Corbin City? Jim can walk to the station easily in 15 minutes. When should he leave home?

2. When Jim got to the station, he saw on the train chart that his train was not expected until 8:25. How many minutes late was it?

3. Look at the timetable. How many minutes does it take Jim's train to go from Corbin City to Mayville? A clock may help you find out.

4. How many minutes does it take the train to go from Mayville to Jackson?

5. How long does the whole trip from Corbin City to Jackson take?

6. If Jim's train does not make up any of the time it is late, when should it get to Mayville?

7. If the train is 5 minutes late when it reaches Jackson, when should Jim get to Jackson?

Finding Fractions of Numbers

Do you remember how to find a fraction of a number? You have learned that a **fraction** is a **part of a thing** or **part of a group.**

1. There are 260 pupils in Larry's school. If $\frac{1}{2}$ of them are boys, how many boys are there in the school? $260 \div 2 = ?$

2. What is $\frac{1}{6}$ of 240? $240 \div 6 = ?$

3. How do you find $\frac{1}{8}$? What is $\frac{1}{8}$ of 400?

Copy and fill in the missing numbers.

	a	*b*	*c*
4.	$\frac{1}{9}$ of 270 = ?	$\frac{1}{4}$ of 128 = ?	$\frac{1}{3}$ of 246 = ?
5.	$\frac{1}{6}$ of 306 = ?	$\frac{1}{2}$ of 166 = ?	$\frac{1}{8}$ of 320 = ?
6.	$\frac{1}{8}$ of 728 = ?	$\frac{1}{5}$ of 400 = ?	$\frac{1}{2}$ of 1000 = ?

7. There are 36 inches in a yard. One half of a yard is 18 inches. How many inches are there in $\frac{1}{3}$ of a yard? $36 \div 3 = ?$

8. The time from midnight to the next midnight is called a **day.** There are 24 hr. in a day. How many hours are there in $\frac{1}{2}$ day?

Copy and finish these examples.

	a	*b*
9.	$\frac{1}{4}$ yd. = ? in.	$\frac{1}{6}$ yd. = ? in.
10.	$\frac{1}{9}$ yd. = ? in.	$\frac{1}{6}$ doz. = ?
11.	$\frac{1}{3}$ day = ? hr.	$\frac{1}{2}$ hr. = ? min.
12.	$\frac{1}{3}$ min. = ? sec.	$\frac{1}{6}$ min. = ? sec.
13.	$\frac{1}{4}$ yr. = ? mo.	$\frac{1}{6}$ ft. = ? in.

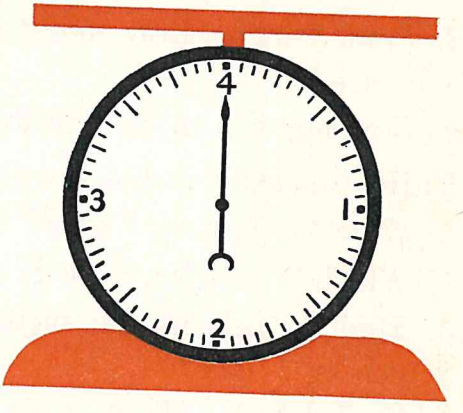
Fractions of Measures

1. $\frac{1}{4}$ dozen = 3 things. Then $\frac{3}{4}$ (three quarters) of a dozen things = 3 × $\frac{1}{4}$ dozen, or 3 × 3, or ? things.

2. $\frac{1}{3}$ dozen = 4. Then $\frac{2}{3}$ (two thirds) dozen = 2 × 4, or ?

3. How many inches are there in $\frac{3}{4}$ foot? How many inches are there in $\frac{2}{3}$ ft.?

4. Look at the scales. How many ounces are there in a pound? In $\frac{1}{2}$ lb.? In $\frac{1}{4}$ lb.?

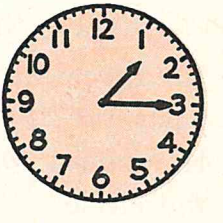


5. Three fourths of a pound are 3 times as much as $\frac{1}{4}$ lb. How many ounces in $\frac{3}{4}$ lb.?

6. There are 4 bars, or sticks, of butter in a pound. What fraction of a pound is each bar? How many ounces does each bar weigh?

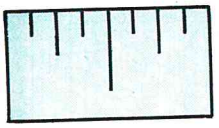
7. What fraction of a pound are two bars of butter? How many ounces do they weigh? Three bars are what fraction of a pound? How many ounces do they weigh?

8. How many minutes are there in $\frac{1}{4}$ hour? In $\frac{3}{4}$ hr.?



9. If Dick gets 40¢ an hour, how much should he get for working 15 min.? For working 45 min.?

Understanding Fractions



1. Look at this picture of an inch on a ruler. Into how many equal parts is this inch divided? Each part is what fraction of an inch long?

2. Find $\frac{1}{4}$ inch in the picture. How many quarter inches are there in 1 inch?

3. Find $\frac{1}{2}$ inch. How many $\frac{1}{2}$ inches are there in one inch?

4. How many $\frac{1}{8}$ inches are there in $\frac{1}{4}$ inch?

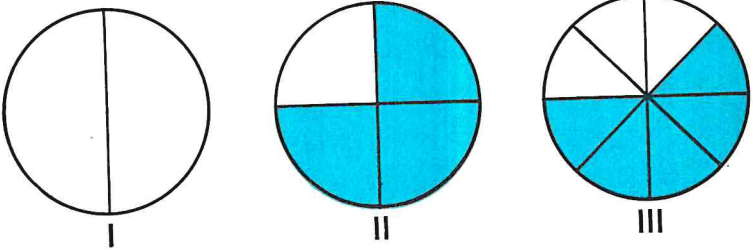
5. How many $\frac{1}{4}$ inches are there in $\frac{1}{2}$ inch?

6. Which is larger, $\frac{1}{4}$ or $\frac{1}{2}$?

7. Which is smaller, $\frac{1}{4}$ or $\frac{1}{8}$?

8. Find $\frac{3}{4}$ inch in the picture. Which is longer, $\frac{3}{4}$ inch or $\frac{1}{2}$ inch?

9. Find $\frac{3}{8}$ inch. Which is longer, $\frac{3}{8}$ in. or $\frac{3}{4}$ in.?



These three circles are all the same size.

10. Circle I is divided into halves. How many equal parts are there? Circle II is divided into fourths. How many fourths does it take to make one half of the circle?

11. Look at Circle II on page 142. $\frac{3}{4}$ of the circle is colored. Which is larger, $\frac{3}{4}$ of the circle or $\frac{1}{2}$ of the circle? What fraction of Circle II is not colored?

12. Look at Circle III. Into how many equal parts is the circle divided? Each part is what fraction of the circle?

13. $\frac{5}{8}$ of Circle III is colored. What fraction of this circle is not colored?

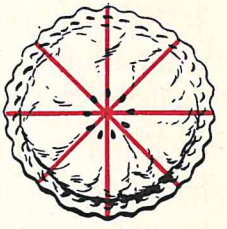
14. Which is more, $\frac{5}{8}$ of a pie or $\frac{1}{2}$ of a pie? $\frac{5}{8}$ of a pie or $\frac{3}{4}$ of a pie?

15. Jean's mother baked a little cake. She cut it into fourths. She gave $\frac{1}{4}$ to Jean and $\frac{1}{4}$ to Tony. What fraction of the cake did Jean and Tony get together? $\frac{1}{4} + \frac{1}{4} = ?$

What fraction of the cake was left?

$$1 - \frac{1}{2} = ?$$

16. Don's mother made a big pie. She cut the pie into 8 equal pieces. Six people each had a piece of the pie. What fraction of the pie did they eat in all? How many fourths did they eat? $\frac{6}{8}$ is the same as $\frac{3}{4}$.



What fraction of the pie was left? $1 - \frac{3}{4} = ?$

Copy and write the missing fractions.

17. 1 cake $= \frac{?}{4}$ cake 1 cake $- \frac{1}{4}$ cake $=$? cake

18. 1 pie $= \frac{?}{8}$ pie 1 pie $- \frac{1}{8}$ pie $=$? pie

Pages 284 and 285 provide enrichment material which can be used after this page.

Why Multiply?

You multiply for the same reason that you add. That is, you multiply to find how many in all.

Multiplying is a short way to find:

a. The total cost of several things at the same price.

b. The total number in several equal groups or numbers.

You also multiply to:

c. Change larger units of measure to smaller units.

The following problems are quickies. Just tell the answers or write them on another paper.

1. We bought 8 yards of ribbon for badges for our play day. How many feet of ribbon did we buy?

2. Bill's den of Cub Scouts will take a hike. If they walk 2 miles in an hour, how many miles will they walk in 3 hours?

3. Ellen wants to buy 8 bags of peanuts for her friends at a circus party. Peanuts cost 10 cents a bag. How much will 8 bags cost?

4. Jean found 3 boxes of colored pencils in her Christmas stocking. If there were 6 pencils in each box, how many pencils did Jean get?

5. Jean and Tony are going to spend 6 weeks at the seashore next summer. How many days will that be?

6. Jerry counted five 6-cent stamps on a package his mother got. How much was the total postage?

7. Sue's mother promised to make biscuits for a school party. If she bakes 6 pans of biscuits, with 8 biscuits in each pan, how many biscuits will she have?

8. Sue and her mother have made 4 gallons of tomato juice. If they put it into quart jars, how many quarts will it make?

9. Allen pasted his vacation pictures into his album. They made 7 pages, with 4 pictures on each page. How many vacation pictures did he put in his album?

10. Tom and Bill are playing with their toy airplanes. They have 3 rows of airplanes with 7 in each row. How many airplanes do they have?

11. Ann got 2 dollars for her birthday. She changed this money into dimes for her dime bank. How many dimes did she get?

12. Bill bought four marbles for a nickel apiece. How much did he spend?

13. Last week, 5 of Bob's hens laid 6 eggs apiece. How many eggs did Bob get from these 5 hens?

14. Cream puffs are 9 cents apiece at the bakery. How much must Barbara pay if she buys 5 cream puffs?

Now look over the problems you have just worked.

15. In which problems did you multiply *to change larger units of measure to smaller units?*

16. In which problems did you multiply *to find the total cost of several things at the same price?*

17. How did you use groups in the other problems?

Why Divide?

You multiply to find how many in all. You divide for just the opposite reason. You already know the total of several groups of the same size, and you want to find:

a. How many groups there are, or

b. The size of one group.

In Problem 1, for instance, you know how many in all (6 pints). One quart is a "group" of 2 pints, and you want to find how many groups (quarts).

In Problem 2, you know there are 24 stamps in all, and you want to find how many groups, or rows, of 6 stamps each.

In Problem 3, the total is 20 cents, and you want to find how many bars, or 5-cent "groups."

Can you tell how you use groups in each of the other problems? Do you find how many groups there are, or the size of one group? Find and tell the answers.

1. Sue made 6 pints of strawberry jam. How many quarts of preserves did she make?

2. Jerry has 24 stamps to put on a page of his small stamp book. If he can get 6 stamps on each row, how many rows of stamps will he have?

3. Peggy has 20 cents to spend for candy. How many 5-cent candy bars can she buy?

4. Last week Bob's hens laid 28 eggs. How many eggs a day did they lay on the average?

5. Sally bought 8 pounds of apples. The clerk charged her 72 cents for them. How much a pound did the apples cost?

6. Twenty-five children in our room want to go to the school picnic. How many cars will be needed to take them if each car can take 5 children?

7. Don and his father planted 30 little pine trees. They put the trees in 3 equal rows. How many trees were in each row?

8. It is 21 days until Linda's birthday. How many weeks does Linda have to wait?

9. Don sold 6 cucumbers for 30 cents. How many cents did he get for each cucumber?

10. Jill has 32 roses. If she makes them into 4 bunches of the same size, how many roses must she put in each bunch?

11. If sugar costs 9 cents a pound, how many pounds can I buy for 45 cents?

12. Our schoolroom is 24 ft. wide. How many yards wide is it?

13. Ann and Jean are making ribbon badges for play day. If each badge is 6 in. long, how many badges can they make from a yard?

14. Judy wants to change 20 pennies into nickels for her nickel bank. How many nickels should she get?

15. Sam wants to ride 12 miles on his bicycle. If he averages 6 miles an hour, how many hours will it take him?

Supplying Numbers for Problems

Here are some quickies using multiplication and division. A number is missing in each one. On your paper, write a sensible number that will fit in where a number is missing.

You will have to decide whether the problem is a multiplication or a division problem. In the division problems, write numbers that will make the answers come out exactly.

Remember, these are quickies, so use easy numbers. Write the answers to your problems on your paper, too.

1. We bought ? packages of doughnuts for our school party. There were 6 doughnuts in each package. How many doughnuts did we buy?

2. Mrs. Lane bought a dozen oranges. How many days will the oranges last if the Lanes use ? oranges a day?

3. Ellen bought ? pints of ice cream for her party. How many quarts of ice cream is this?

4. Sam's mother made ? cookies. She told Sam he could take $\frac{1}{3}$ of them for his friends. How many cookies did she say Sam could have?

5. Jerry can ride ? miles an hour on his bicycle. At that rate, how many miles can he ride in 3 hours?

6. ? of Bob's hens have baby chicks. Each of these hens has 10 chicks. How many chicks do these hens have in all?

7. On a merry-go-round at the park, rides cost 7¢ apiece. How many rides can Jean get if she has ? cents to spend?

8. Six boys are writing invitations to the school play. If each boy writes ? invitations, how many will all 6 boys write?

9. Sally paid ? cents for 4 bananas. On the average, how much did each banana cost?

10. Ellen has 24 candy hearts to give away to her friends. How many girls can she give hearts to, if she gives ? to each one?

11. Tom's schoolroom is ? feet long. How many yards long is it?

12. In Bob's assembly room, there are ? rows of seats, with 8 seats in each row. How many seats are there in the assembly room?

13. If one kind of candy bar costs ? cents each, how many can Peggy buy for 30 cents?

14. Ann bought 8 new postcards for her collection. The cards cost ? cents apiece. How much did Ann spend for the new postcards?

15. Sue's muffin pan holds 3 rows of muffins with ? muffins in each row. How many muffins does the muffin pan hold?

16. If Peggy saves ? cents a day, how long will it take her to save 30 cents for a puzzle?

17. If Joe practices on his trumpet for 10 minutes a day, how long will he practice in ? days?

Practice in Adding Money Numbers

Do you remember how to add dollars and cents? These examples will help you keep up your skill. Be sure to write the dollar sign and point in each answer.

Copy, add, and check.

	a	b	c	d	e
1.	\$ .67	\$2.18	\$10.38	\$6.19	\$12.69
	.49	5.70	32.75	.75	8.16
	.06	3.44	7.86	3.26	.58
	.54	6.83	8.65	.07	20.00
2.	\$ .94	\$ .99	\$ 1.76	\$13.54	\$10.87
	.50	2.60	.84	28.39	16.59
	.70	.97	15.00	3.97	1.57
	.48	4.25	6.72	4.94	.63
	.87	.27	18.49	12.70	3.28

Subtracting Money Numbers

How well can you subtract money numbers? These examples will help you find out.

Copy, subtract, and check.

1.	\$1.00	\$2.39	\$12.00	\$7.43	\$23.97
	.42	.87	6.18	5.27	14.68
2.	\$8.48	\$3.47	\$8.93	\$7.24	\$21.20
	.69	.64	7.25	6.45	6.95
3.	\$10.00	\$1.16	\$7.50	\$13.25	\$20.00
	5.99	.78	3.83	7.39	12.84

Can You Multiply Money Numbers?

These examples will show you how much you remember about multiplying dollars and cents. You can check multiplication examples by going over your work or by working each example again.

Copy, multiply, and check.

	a	*b*	*c*	*d*	*e*
1.	$ .36 8	$ .78 4	$ .39 2	$ .94 5	$ .86 7
2.	$ .19 7	$ .68 5	$ .96 8	$ .59 9	$ .37 7
3.	$3.07 9	$4.39 6	$2.48 3	$4.86 9	$1.87 6
4.	$5.39 4	$6.08 8	$3.60 6	$2.17 5	$3.69 3
5.	$8.57 2	$4.05 7	$3.50 5	$4.12 8	$4.26 4

Can You Divide Money Numbers?

Do you remember how to divide dollars and cents? These examples will help you find out.

Copy and divide. Check by multiplying.

	a	*b*	*c*	*d*
1.	$5\overline{)\$ .40}$	$8\overline{)\$ .72}$	$7\overline{)\$ .56}$	$4\overline{)\$2.48}$
2.	$8\overline{)\$4.80}$	$9\overline{)\$6.30}$	$6\overline{)\$5.40}$	$3\overline{)\$2.49}$
3.	$6\overline{)\$3.06}$	$5\overline{)\$2.00}$	$9\overline{)\$5.40}$	$8\overline{)\$3.28}$

Store Problems

Do you ever buy things at the store? How do you use arithmetic in a store? Here are some problems about using arithmetic in buying things.

Number your paper 1 to 15. Read each problem carefully, and decide whether you should add, subtract, multiply, or divide. On your paper, write A, S, M, or D after the number of each problem to show which process you use. Then find and write the answer to the problem.

1. Bill can buy a cheap baseball glove for $3.65. A better glove costs $6.25. How much more does the better glove cost?

2. During a sale, Peggy can get some $8.60 figure skates for half the regular price. How much would she have to pay for the skates during the sale?

3. Mrs. Lane found some orange juice on sale for 24 cents a can. How much would she have to pay for 8 cans of that orange juice?

4. Ann wants a pair of roller skates costing $3.69. She has saved $2.75. How much does she still need to save to buy the skates?

5. Jill bought some tulip bulbs for $1.35. She gave the clerk a five-dollar bill. How much change should she get?

6. Mrs. Lane paid $6.30 for 3 chickens. On an average, what was the cost of one chicken?

7. Barbara's high-school brother makes 75 cents an hour working in a store. One week he worked 9 hours. How much did he earn?

8. Jean wanted a paint set that cost $1.35. One day she saw it on sale for 98¢. How much would Jean save by buying it on sale?

9. In August, a store was selling straw hats for $\frac{1}{2}$ the regular price. How much would Mr. Lane have to pay for a hat that had sold for $6.80?

10. Nora wants to buy a set of 4 books. If each book costs $1.75, how much will the set of 4 books cost?

11. His father bought Sam a fishing rod for $3.49 and a reel for $2.89. How much did the rod and reel both cost?

12. Tom bought a can of three tennis balls. If the can of balls cost $1.59, how much did each tennis ball cost?

13. Nancy paid 65¢ each for 4 new piano pieces. How much did her music cost?

14. Ann's mother found a sweater for Ann marked $1.65. The clerk said this was $1.35 less than the regular price. What was the regular price of the sweater?

15. A storekeeper bought 4 chickens from Bob for $4.80. How much did Bob receive for each chicken, on the average?

Pages 286 and 287 provide enrichment material which can be used after this page.

Two Problems in One

There are two questions in each of these problems. You must answer the first question before you can answer the second. Write both answers.

In the first five problems, you multiply to find the first answer and subtract to find the second answer. What processes do you use in the other problems?

1. Ellen bought 8 paper-hat snappers for her party. They cost 3¢ each. How much did they cost in all? Ellen gave the clerk a quarter. How much change did she get?

2. Dick is making toy wagons. He has 15 spools to use for wheels. Each wagon takes 4 spools. If Dick made 3 wagons, how many spools did he use? How many spools were left?

3. Jean bought six 3-cent stamps to mail her valentines. How much did the six stamps cost? If she gave the man at the stamp window a quarter, how much change did she get?

4. Jill and Sue made 35 pieces of fudge for the candy sale. They put the fudge in 5 little boxes, with 6 pieces in each box. How many pieces of fudge went into the 5 boxes? How many pieces were left?

5. Sue has 34 raisins to put on the gingerbread men she is making. She has put raisins on six of the men, with 5 raisins on each one. How many raisins has Sue used? How many raisins does she have left?

6. Jill bought 2 dozen pansy plants for 5 cents a plant. How many plants did she buy? What was the total cost?

7. Sam lives 4 miles from school. Bob lives 8 miles from school, in the opposite direction. How many miles is Bob's house from Sam's house? How long will it take Sam to ride his bicycle from his house to Sam's house if he rides 6 miles an hour?

8. Miss Hood's fourth grade is learning folk-dancing. There are 9 pairs of dancers. How many children is this? If there are 19 children in the room, how many are left over to dance with Miss Hood?

9. Four boys and 3 girls want to buy a 70-cent watermelon for a picnic. How many children want to buy the watermelon? If they share the cost equally, how much must each child pay?

10. Bill wants to buy 12 marbles costing 3 for 5 cents. How many 3's are there in 12 marbles? How much will the 12 marbles cost?

11. Sue made 3 pans of fudge. There were 18 pieces of fudge in each pan. How many pieces did she make? She wants to put the fudge in 6 boxes for Christmas presents. If she puts the same number of pieces in each box, how many pieces will be in each box?

12. Jerry has 31 stamps to put in his trading book. He can get 4 rows of stamps on a page, with 7 stamps in each row. How many of his stamps can he get on one page? How many stamps will be left over?

Dividing by 2 With 1 Left

1. Peggy is playing jacks. She has 13 jacks, and is picking them up by 2's. How many 2's can she pick up? Will there be any jacks left over?

To find how many 2's there are in 13, divide 13 by 2. But you cannot divide 13 exactly by 2. So you must think of the next smaller number than 13 that 2 will go into. Can you see from the picture how many jacks Peggy will pick up by 2's? How many 2's will she pick up? How many jacks will be left?

$$13 \div 2 = 6, \text{ with 1 left}$$

What was the next smaller number than 13 that could be divided exactly by 2?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

2. The colored numbers in this table are numbers that can be divided exactly by 2. They are called **even numbers.** The other numbers are called **odd numbers.**

All even numbers can be divided exactly by 2. When an odd number is divided by 2, there will always be 1 left over.

Read the even numbers in the table. You are counting by 2. Now read the odd numbers.

3. Jim has 15 cents. The dots show them. Jim wants to buy lollipops costing 2 cents each. Cover each 2 cents to find how many lollipops Jim can buy and how many cents he will have left.

15 ÷ 2 = ?, with ? ¢ left

4. Sue has 7 apples. If she divides them equally with Bob, how many apples will each have? How many apples will be left over? 7 ÷ 2 = ?, with ? left

Copy and finish these examples.

	a	*b*
5.	9 ÷ 2 = ? with ? left	11 ÷ 2 = ? with ? left
6.	17 ÷ 2 = ? with ? left	5 ÷ 2 = ? with ? left
7.	3 ÷ 2 = 1 with ? left	2 ÷ 2 = ? with 0 left
8.	1 ÷ 2 = 0 with ? left	8 ÷ 2 = ? with ? left
9.	14 ÷ 2 = ? with ? left	13 ÷ 2 = ? with ? left
10.	16 ÷ 2 = ? with ? left	19 ÷ 2 = ? with ? left

Dividing by 3 With a Remainder

1. Three boys went fishing all day. There were 8 plums in their lunch. How many plums could each boy have?

To find out, you could subtract 3 from 8, supposing each boy took a plum, then subtract another 3 from the 5 that were left, for another plum for each boy. How many plums would be left over?

Or you could divide 8 by 3. How many 3's are there in 8? How many are left? $8 \div 3 = 2$ with 2 left.

When a number cannot be divided exactly, the number left over is called the **remainder.**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

2. The colored numbers in this table are numbers that can be divided exactly by 3. The table will help you in dividing by 3 with a remainder. To divide 20 by 3, you find the colored 18 which is 2 less than 20. There are six 3's in 18, so

$$20 \div 3 = 6 \text{ with 2 remainder.}$$

Write the quotients and remainders.

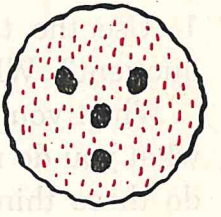
	a	*b*	*c*	*d*
3.	$7 \div 3$	$11 \div 3$	$14 \div 3$	$25 \div 3$
4.	$16 \div 3$	$22 \div 3$	$29 \div 3$	$5 \div 3$
5.	$23 \div 3$	$17 \div 3$	$10 \div 3$	$28 \div 3$

Dividing by 4 With a Remainder

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

The colored numbers in this table are numbers that can be exactly divided by 4. Can you use the table to divide by 4 with a remainder?

1. Sue has made some cookies. She wants to put funny faces on them with raisins. She has 30 raisins. If she uses 4 raisins for each cookie, on how many cookies can she put funny faces? How many raisins will she have left?



Look at the table. The largest colored number which is less than 30 is 28. How many 4's are there in 28? 30 ÷ 4 = ? with ? remainder.

Write the quotients and remainders.

	a	*b*	*c*	*d*
2.	10 ÷ 4	14 ÷ 4	23 ÷ 4	7 ÷ 4
3.	27 ÷ 4	17 ÷ 4	5 ÷ 4	11 ÷ 4
4.	39 ÷ 4	29 ÷ 4	18 ÷ 4	35 ÷ 4
5.	26 ÷ 4	15 ÷ 4	34 ÷ 4	33 ÷ 4
6.	38 ÷ 4	19 ÷ 4	25 ÷ 4	13 ÷ 4
7.	22 ÷ 4	37 ÷ 4	21 ÷ 4	31 ÷ 4

Dividing by 5 With a Remainder

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

This table shows numbers that can be divided exactly by 5.

1. Use the table to divide 43 by 5. What is the quotient? What is the remainder?

When you divide with a remainder, writing down what you do may help you. In dividing 43 by 5, you do three things:

```
   8  (1)
5)43
  40  (2)
   3  (3)
```

(1) You think of the nearest number smaller than 43 that 5 will go into exactly. It is 40. You *divide* 40 by 5, and write 8, the quotient, over the 3, in ones place.

(2) You *multiply* 8 by 5, and write the 40 under the 43.

(3) You *subtract* 40 from 43, to find the remainder.

2. Look at the table. What is the largest colored number that is smaller than 29? Than 23? Than 46?

3. On your paper, divide 19 by 5 and write down what you do. What is the quotient? The remainder?

Copy these examples and find the quotients and remainders.

	a	b	c	d	e	f
4.	$5\overline{)18}$	$5\overline{)27}$	$5\overline{)37}$	$5\overline{)44}$	$5\overline{)36}$	$5\overline{)41}$
5.	$5\overline{)46}$	$5\overline{)22}$	$5\overline{)34}$	$5\overline{)12}$	$5\overline{)28}$	$5\overline{)38}$
6.	$5\overline{)16}$	$5\overline{)42}$	$5\overline{)9}$	$5\overline{)49}$	$5\overline{)32}$	$5\overline{)23}$
7.	$5\overline{)11}$	$5\overline{)29}$	$5\overline{)39}$	$5\overline{)17}$	$5\overline{)26}$	$5\overline{)33}$
8.	$5\overline{)24}$	$5\overline{)47}$	$5\overline{)21}$	$5\overline{)31}$	$5\overline{)14}$	$5\overline{)48}$

9. On your paper, write the numbers in the following row that can be divided exactly by 2:

17 8 12 7 11 16 14

10. Write the numbers that can be divided exactly by 3: 27 10 13 18 26 21 20

11. Write the numbers that can be divided exactly by 4: 24 38 18 11 17 36 16

12. Write the numbers that can be divided exactly by 5: 23 15 9 45 34 40 14

How Do You Check?

Do you remember how to check your work? See if you can answer these questions.

1. What numbers do you add to check $50 - 13 = 37$?

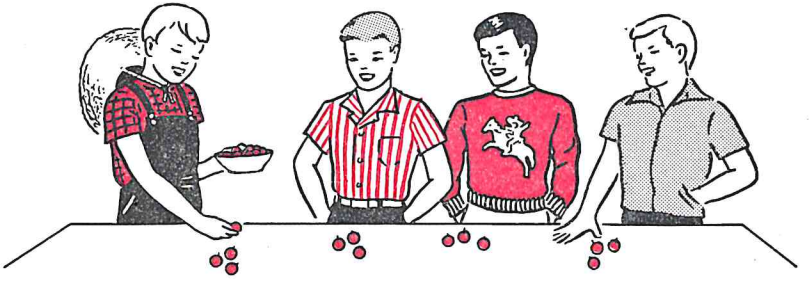
2. What numbers should you multiply to check the example $45 \div 9 = 5$?

3. How do you check column addition?

4. How can you check a multiplication example?

Pages 288 and 289 provide enrichment material which can be used after this page.

Checking Division With Remainders



Example	*Check*
$4\overline{)31}$ quotient 7, 28, remainder 3	$7 \times 4 = 28$, $28 + 3 = 31$

1. Don has 31 cherries to share with three boys. How many cherries will each of the 4 boys get? How many cherries will there be left?

Check: If each boy gets 7 cherries, the 4 boys will get $4 \times 7 = 28$ cherries. With the 3 cherries left over, this makes Don's 31 cherries.

To check division with a remainder, multiply the quotient by the **divisor** (the number you are dividing by). Then add the remainder.

Copy, divide, and check.

	a	*b*	*c*	*d*	*e*	*f*
2.	$3\overline{)23}$	$5\overline{)38}$	$2\overline{)17}$	$4\overline{)34}$	$3\overline{)25}$	$5\overline{)42}$
3.	$2\overline{)19}$	$4\overline{)19}$	$3\overline{)29}$	$5\overline{)34}$	$2\overline{)11}$	$3\overline{)20}$
4.	$4\overline{)15}$	$2\overline{)15}$	$5\overline{)47}$	$4\overline{)27}$	$3\overline{)17}$	$5\overline{)21}$
5.	$3\overline{)26}$	$5\overline{)29}$	$4\overline{)21}$	$5\overline{)43}$	$4\overline{)30}$	$4\overline{)39}$

Ellen's Birthday Party

1. There were 12 children at Ellen's birthday party. For the party, Ellen's mother bought 12 snappers holding fancy paper hats. The snappers cost 9¢ each. How much did they all cost?

2. The children played a game of pinning the tail on the donkey. Bill came nearest. He pinned the tail only 9 inches from the donkey. Jerry was the farthest away, just a yard from the donkey. How much closer did Bill pin the tail?

3. The children had a peanut hunt. Ann found 17 peanuts and Jean found 8 peanuts. How many did both girls find together?

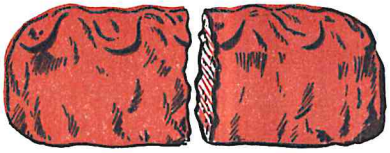
4. The six boys found 50 peanuts in all. They agreed to share them equally. How many peanuts did each boy get? How many peanuts were left over?

5. They bobbed for apples that were floating in a tub of water. Tony caught his apple in 52 seconds. It took Tom only 19 seconds to catch his apple. How many seconds longer did it take Tony?

6. Ellen was nine years old, so she had 10 candles on her birthday cake, "with one candle to grow on." She blew out all but 2 candles. How many candles did she blow out?

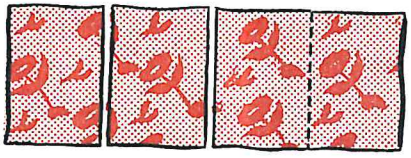
7. Ellen's mother thought a pint of ice cream would serve 3 children. How many pints did she need for 12 children? How many quarts is this?

Using Halves and Fourths



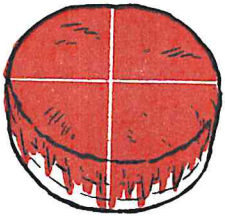
1. Jim had a candy bar. He broke it into two halves and gave Tom one half. What fraction of the bar did Jim have left? $1 - \frac{1}{2} = ?$

Half a candy bar plus half a candy bar equals one whole candy bar. $\frac{1}{2} + \frac{1}{2} = 1$



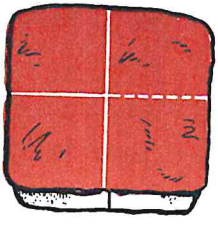
2. Ann had a yard of dress goods. She used $\frac{1}{4}$ yard to make a dress for one of her dolls. She used $\frac{1}{4}$ yard to make some aprons for her dolls. How many fourths of a yard had she used? What fraction of a yard had she used? $\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$.

What fraction of a yard was left?



3. One night, Mrs. Lane had a small layer cake for dessert. She cut it into 4 pieces, and 3 people each took 1 piece. What fraction of the cake was eaten? $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$. What fraction of the cake was left?

$$1 - \frac{3}{4} = \frac{1}{4}$$



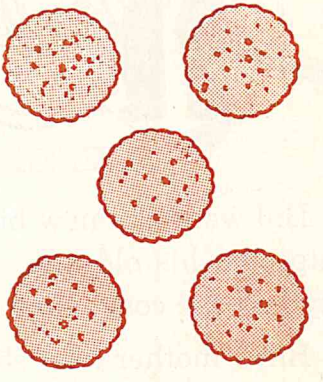
4. Peggy had a square cake. She and Sally shared half of the cake. What fraction of the whole cake did each girl eat? What fraction of the whole cake did Peggy have left?

5. Bob brought his mother a dozen fresh eggs. She used $\frac{1}{4}$ of them to make some cookies. How many eggs did she use?

Draw a picture of a dozen eggs and cross out $\frac{1}{4}$ of them. What fraction of a dozen eggs did Bob's mother have left after she made the cookies? How many eggs did she have left? $9 = \frac{3}{4}$ of a dozen.

6. When eggs are selling for 48¢ a dozen, how much does $\frac{1}{4}$ dozen eggs cost? How much can Bob get for $\frac{3}{4}$ dozen eggs?

7. Bob and Sue were hungry. They found 5 cookies in Sue's cookie jar. If they divided the cookies equally, how many did each one get? $5 \div 2 = 2$, with 1 left. How could they divide the cookie that was left?



Bob and Sue each got 2 cookies and $\frac{1}{2}$ cookie. You can write this number "$2\frac{1}{2}$." You read it "two and a half."

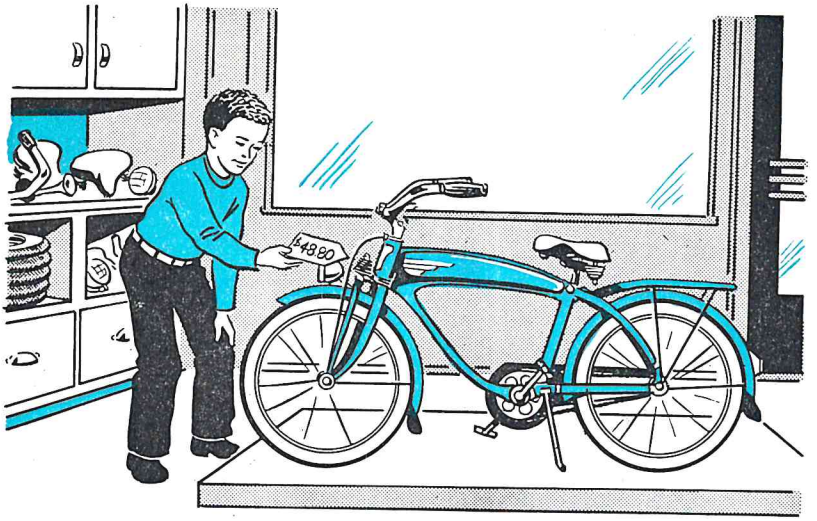
8. If 2 girls have 7 apples to divide equally, how many apples will each girl get?

9. Sam went fishing with 3 other boys. Sam's mother gave the four boys 9 small pies. How many pies could each boy have?

10. Read these numbers: $1\frac{1}{4}$, $4\frac{1}{2}$, $5\frac{3}{4}$, $8\frac{1}{4}$.

11. Which is more, $\frac{1}{2}$ or $\frac{3}{4}$? Which is less, $\frac{1}{2}$ or $\frac{1}{4}$?

Bill's Bicycle



1. Bill wanted a new bicycle costing $48.80. He had outgrown his old one. His parents said they would pay half the cost. How much would his parents pay?

2. Bill's mother said she would pay one half of the parents' share. What fraction of the cost would this be? How much money did Bill's mother offer to pay?

3. Bill started right away to earn money for his share of the cost. One Saturday he earned $1.40 by picking strawberries for a farmer. He was paid 7¢ a box. How many boxes of strawberries did he pick? (Think of $1.40 as 140 cents.)

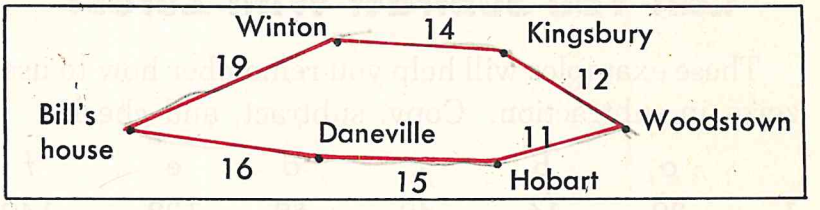
4. Bill's father paid him 35 cents an hour for helping in the yard. One week Bill worked 8 hours in the yard. How much did he earn that week?

5. Bill painted his old bicycle and repaired it, at a total cost of $3.85. Then he sold it for $16.00. How much money did he make?

6. On his birthday, Bill got $3.50 as a present from his older brother. He found a nickel in the pocket of an old coat of his. Mrs. Smith, a neighbor, paid him $2.40 she owed him for helping her with her yard. How much money could Bill add to his bicycle fund that day?

7. When Bill counted his money, he found he had $22.30. How much more was this than the $20.40 that Bill needed?

8. After Bill bought the bicycle, he found he needed a bell for 35¢, a lock for 75¢, and a basket for $1.19. How much would all these cost?



9. Bill and Jerry are planning to take a trip on their bicycles from Bill's house to his uncle's home in Woodstown. The boys looked at a road map to find the shortest way to go. How many miles is it by way of Winton and Kingsbury? How many miles by Daneville and Hobart? How many miles will the boys save by going the shorter way?

Pages 290 and 291 provide enrichment material which can be used after this page

Can You Use Zeros in Addition?

Do you remember how to use zeros in addition? Copy these examples and find the sums.

	a	*b*	*c*	*d*	e	*f*
1.	70 52	19 60	57 46	35 65	80 70	10 90
2.	$1.07 2.90	$4.40 5.20	$6.04 3.08	$3.00 9.00	$1.40 3.08	$ .70 1.34
3.	38 9 20 60 7	80 18 44 8 10	50 290 408 93 49	$2.06 .70 1.64 .09 1.31	$5.60 2.85 5.08 3.07 .86	$12.00 3.67 10.60 4.08 .65

Can You Subtract With Zeros?

These examples will help you remember how to use zeros in subtraction. Copy, subtract, and check.

	a	*b*	*c*	*d*	e	*f*
1.	20 9	16 6	40 13	50 41	128 30	140 90
2.	400 357	700 405	601 309	800 206	900 424	800 730
3.	$2.50 1.75	$5.00 1.40	$6.08 2.68	$4.02 1.08	$8.00 4.01	$10.00 7.92

	a	*b*	*c*
4.	$1.70 — 88¢	$6 — $5.87	$2 — 69¢

Multiplying and Dividing With Zeros

These examples will help you remember how to use zeros in multiplication and division.

Copy and find the products.

	a	b	c	d	e	f
1.	40 × 2	70 × 6	50 × 8	60 × 5	203 × 3	103 × 4
2.	108 × 7	105 × 6	320 × 2	170 × 4	490 × 5	600 × 9
3.	\$ .09 × 7	\$ .08 × 6	\$ .20 × 4	\$ .80 × 8	\$ .50 × 4	\$1.09 × 6
4.	\$3.04 × 7	\$1.50 × 3	\$6.90 × 2	\$9.00 × 8	\$4.25 × 4	\$10.06 × 8

Copy, divide, and check.

	a	b	c	d	e
5.	$3\overline{)60}$	$2\overline{)140}$	$8\overline{)400}$	$6\overline{)540}$	$5\overline{)105}$
6.	$4\overline{)804}$	$3\overline{)930}$	$5\overline{)2050}$	$7\overline{)3507}$	$9\overline{)2790}$
7.	$5\overline{)\$.40}$	$7\overline{)\$2.10}$	$5\overline{)\$3.00}$	$4\overline{)\$2.08}$	$6\overline{)\$3.06}$

Facts About Zero

Copy and finish these number facts about 0.

	a	b	c
1.	$8 + 0 = ?$	$0 + 5 = ?$	$0 + 0 = ?$
2.	$6 - 0 = ?$	$0 - 0 = ?$	$7 - 7 = ?$
3.	$9 \times 0 = ?$	$0 \times 0 = ?$	$0 \div 1 = ?$

Dividing by 6 With Remainders

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

This table shows numbers that can be divided exactly by 6.

1. Look at the table. What is the largest colored number less than 39? Than 50? Than 27? Than 47?

2. Use the table to divide 34 by 6. What is the quotient? What is the remainder? How do you check your work?

Copy, divide, and check.

	a	*b*	*c*	*d*	*e*	*f*
3.	$6\overline{)50}$	$6\overline{)39}$	$6\overline{)27}$	$6\overline{)47}$	$6\overline{)15}$	$6\overline{)58}$
4.	$6\overline{)29}$	$6\overline{)53}$	$6\overline{)20}$	$6\overline{)33}$	$6\overline{)49}$	$6\overline{)17}$
5.	$6\overline{)45}$	$6\overline{)35}$	$6\overline{)23}$	$6\overline{)25}$	$6\overline{)51}$	$6\overline{)14}$
6.	$6\overline{)38}$	$6\overline{)19}$	$6\overline{)44}$	$6\overline{)10}$	$6\overline{)21}$	$6\overline{)59}$
7.	$6\overline{)41}$	$6\overline{)32}$	$6\overline{)22}$	$6\overline{)57}$	$6\overline{)28}$	$6\overline{)40}$
8.	$6\overline{)31}$	$6\overline{)26}$	$6\overline{)52}$	$6\overline{)37}$	$6\overline{)56}$	$6\overline{)43}$

Are Your Quotients Too Large?

Sometimes, when you divide, the quotient figure you try may be too large. The examples on this page will show you how to tell whether your quotient is too large.

1. When you divide 40 by 6, the quotient 7 is too large because $7 \times 6 = 42$, and 42 is larger than 40. There are not seven 6's in 40.

Since 7 is too large, try a smaller quotient, 6. Is 6 the right quotient?

Wrong	*Right*
7	6
6)40	6)40
42	36
	4

Some of the following examples are started right. In some of them, the quotient is too large. Copy and finish the right examples. Work the wrong examples correctly.

	a	*b*	*c*	*d*	*e*
2.	8 4)30 32	6 6)37 36	3 6)20 18	9 5)44 45	6 3)17 18
3.	6 4)25 24	9 6)52 54	3 6)17 18	5 5)28 25	6 4)23 24
4.	8 6)47 48	9 4)35 36	9 2)19 18	9 6)57 54	8 5)38 40

Are Your Quotients Too Small?

Sometimes the quotient figure you try may be too small. These examples will show you how to tell whether your quotient is too small.

1. In the example at the right, the quotient 8 is too small because the remainder, 7, is larger than the divisor, 6. There are more than eight 6's in 55.

Since 8 is too small, try a larger quotient, 9. Is 9 the correct quotient?

Wrong	*Right*
8	9
6)55	6)55
48	54
7	1

Some of these examples are started right. In some, the quotient is too small. Copy and finish the right examples. Work the wrong examples correctly.

	a	*b*	*c*	*d*	*e*
2.	6	5	6	9	5
	5)36	4)27	6)40	3)29	6)37
3.	3	8	5	3	7
	5)16	4)33	3)19	6)27	6)49

Some of these quotients are too large, some are too small, and some are right. Copy and finish the correct examples; work the wrong examples again.

4.	7	9	3	7	6
	3)25	5)49	4)17	6)41	3)20
5.	6	5	5	8	7
	6)45	5)31	6)31	4)31	6)51

Dividing by 7 With Remainders

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

This table shows numbers that can be divided exactly by 7.

Copy these examples and find the quotients and remainders. Be sure your quotients are neither too large nor too small. Check your answers.

	a	*b*	*c*	*d*	e	*f*
1.	$7\overline{)25}$	$7\overline{)32}$	$7\overline{)48}$	$7\overline{)51}$	$7\overline{)44}$	$7\overline{)60}$
2.	$7\overline{)55}$	$7\overline{)38}$	$7\overline{)29}$	$7\overline{)47}$	$7\overline{)16}$	$7\overline{)58}$
3.	$7\overline{)64}$	$7\overline{)36}$	$7\overline{)20}$	$7\overline{)68}$	$7\overline{)41}$	$7\overline{)66}$
4.	$7\overline{)57}$	$7\overline{)46}$	$7\overline{)33}$	$7\overline{)69}$	$7\overline{)39}$	$7\overline{)53}$
5.	$7\overline{)40}$	$7\overline{)65}$	$7\overline{)50}$	$7\overline{)37}$	$7\overline{)59}$	$7\overline{)34}$
6.	$7\overline{)62}$	$7\overline{)43}$	$7\overline{)54}$	$7\overline{)45}$	$7\overline{)67}$	$7\overline{)52}$

Measuring Lengths

Step 1	*Step 2*
12 in. 4 48 in.	48 in. 9 in. 57 in.

1. Bill helped Jerry measure his height with a foot ruler. Jerry is 4 feet and 9 inches tall.

Jerry wants to know how much taller his father is than he. His father says he is 71 inches tall.

So Jerry has to change 4 ft. 9 in. to inches. First he changes 4 ft. to inches. In 4 ft. there are 4 × 12 in., or 48 in. He adds 9 in. to the 48 in. Jerry is 57 in. tall. How many inches taller is his father than Jerry?

2. Jerry's little sister is only 3 ft. 4 in. tall. How many inches taller than his sister is Jerry?

Copy and finish these examples.

	a	*b*
3.	4 ft. 6 in. = ? in.	1 ft. 8 in. = ? in.
4.	2 ft. 10 in. = ? in.	5 ft. 11 in. = ? in.
5.	3 ft. 7 in. = ? in.	6 ft. 2 in. = ? in.
6.	8 ft. 1 in. = ? in.	9 ft. 9 in. = ? in.

7. Bill is 58 in. tall. He hopes he will grow to be 1 foot taller than he is now. How many inches tall would he be then?

8. Tony is 4 ft. 11 in. tall. Jean is 4 ft. 5 in. tall. Can you find how many inches taller Tony is than Jean, without changing their heights to inches?

9. Dick wants to make a shelf 2 ft. 6 in. long. How many inches long will it be?

10. Jean measured the length of the Lanes' living room with a yardstick. The room was 5 yards and 1 foot long. To find how many feet long it is, first change 5 yards to feet. 5 × 3 ft. = ? ft. Then add 1 foot. 5 yd. 1 ft. = ? ft.

11. Jean measured the length of the living room rug with the yardstick. The rug was 3 yd. 32 in. long. How many inches long was it?

12. Dick has a board 3 yd. 2 ft. long. How many feet is it in length?

13. How long and wide is your schoolroom in yards and feet? Change these measurements to feet.

Copy and finish these examples.

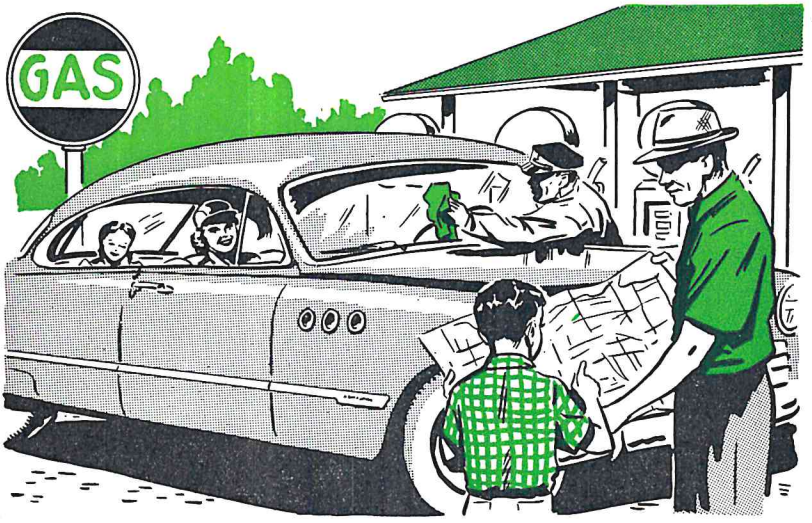
	a	*b*
14.	6 yd. 2 ft. = ? ft.	10 yd. 1 ft. = ? ft.
15.	18 yd. 1 ft. = ? ft.	25 yd. 2 ft. = ? ft.
16.	1 yd. 20 in. = ? in.	2 yd. 6 in. = ? in.
17.	5 yd. 8 in. = ? in.	8 yd. 28 in. = ? in.
18.	6 yd. 20 in. = ? in.	4 yd. 30 in. = ? in.

19. Ann's brother Fred is on the track team. He runs in the half-mile race. This is the 880-yard race. How many yards are there in a mile? 2 × 880 = ?

20. The quarter-mile race is half as long as the half-mile race. How many yards long is this race?

21. There are 1760 yd. in a mile. How many feet are there in a mile? 3 × 1760 = ?

The Lanes' Car



1. One day the Lanes started to drive to a city 150 miles away. After 96 miles, they stopped for lunch. How many miles did they still have to go?

2. On a vacation trip, they drove 89 miles the first day, 306 miles the second day, and 297 miles the third day. How many miles did they drive in the 3 days?

3. At the beginning of one trip, the Lanes' speedometer read 7826 miles. At the end of the trip it read 9135 miles. How many miles long was the trip?

4. One day the Lanes drove 248 miles in 8 hours. How many miles an hour did they average?

5. If they can average 35 miles an hour, how many miles will they go in 5 hours?

6. At a filling station, gasoline was 26 cents a gallon. Mr. Lane bought 9 gallons. How much did he have to pay?

7. Mr. Lane says that one gallon of gasoline will take them 16 miles, on the average. How many miles should 7 gallons take them?

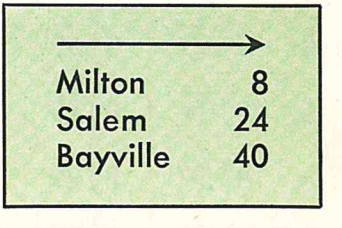
8. If Mr. Lane buys motor oil in large cans he can get it for $1.20 a gallon. How much a quart is this?

9. If Mr. Lane buys the oil by the quart, he must pay 35¢ a quart for it. How much is this per gallon (for one gallon)?

10. At 10:05 they parked beside a parking meter. Mrs. Lane put in 2 cents for 24 minutes of parking time. At 10:22, how many minutes of parking time had they used? How many minutes did they have left?

11. They parked beside another meter at 4:45. They paid for 36 minutes. When was their time used up?

The Lanes saw this road sign which told them how many miles it was to three cities ahead.



12. How many miles farther was it to Salem than it was to Milton?

13. How many miles was it from Salem to Bayville?

14. How many miles was it from Milton to Bayville?

Pages 292 and 293 provide enrichment material which can be used after this page.

Dividing by 8 With Remainders

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Copy the following numbers. In front of each number, write the next smaller number that can be divided exactly by 8. The table will help you.

	a	*b*	*c*	*d*	*e*	*f*
1.	60	43	31	52	19	38
2.	44	50	20	35	68	74

Copy these examples, divide, and check.

3.	$8\overline{)30}$	$8\overline{)66}$	$8\overline{)45}$	$8\overline{)75}$	$8\overline{)36}$	$8\overline{)61}$
4.	$8\overline{)53}$	$8\overline{)63}$	$8\overline{)33}$	$8\overline{)27}$	$8\overline{)51}$	$8\overline{)18}$
5.	$8\overline{)39}$	$8\overline{)79}$	$8\overline{)54}$	$8\overline{)21}$	$8\overline{)57}$	$8\overline{)69}$
6.	$8\overline{)59}$	$8\overline{)29}$	$8\overline{)76}$	$8\overline{)42}$	$8\overline{)55}$	$8\overline{)71}$
7.	$8\overline{)65}$	$8\overline{)58}$	$8\overline{)67}$	$8\overline{)28}$	$8\overline{)78}$	$8\overline{)37}$
8.	$8\overline{)77}$	$8\overline{)46}$	$8\overline{)34}$	$8\overline{)73}$	$8\overline{)47}$	$8\overline{)70}$

Thinking About Time Measures

How much do you remember about measures of time? Can you answer these questions?

1. Which measure is larger, a minute or a second?

2. Which measure is smaller, a year or a month?

3. Which is largest, a day, a week, or an hour?

4. How many minutes are there in $\frac{1}{3}$ of a hour?

5. Which is longer, $\frac{1}{4}$ hour or $\frac{1}{2}$ hour?

6. Which is more, 2 weeks or 12 days?

7. Which is more, $\frac{1}{2}$ minute or 35 seconds?

8. Which is smaller, $\frac{1}{4}$ hour or 20 minutes?

9. Are 10 minutes $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ or $\frac{1}{6}$ of an hour?

10. Which is more, 4 months or $\frac{1}{4}$ year?

11. How many months are there in half a year?

12. How many days in all are there in the 3 spring months, March, April, and May? (Look at a calendar.)

13. How many hours are there in $\frac{1}{3}$ of a day?

14. Are 11 hours more or less than half a day?

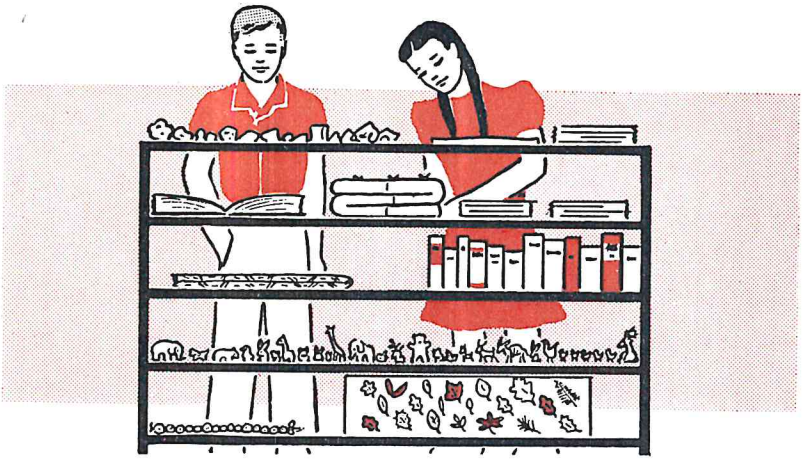
15. Are 20 seconds more or less than $\frac{1}{4}$ minute?

16. If 9 days in October are Saturdays, Sundays, and holidays, how many school days are there in October?

17. When the minute hand of a clock points to 6 and the hour hand points between 12 and 1, what time is it?

18. How many minutes does it take the minute hand of a clock to move from 4 to 8?

Our Hobby Show



1. The Fourth Grade gave a hobby show. Tony and Joe made 5 shelves to hold some of the exhibits. Each shelf was 45 inches long. How many inches of shelf room were there?

2. Tom's hobby was collecting rocks. He brought 17 pieces of different kinds of sandstone, 9 different kinds of granite, and 15 different kinds of slate. How many pieces of rock did Tom bring?

3. Allen brought an album of the pictures he had taken. There were 28 pages in the album, with 4 pictures on each page. How many pictures were there in the album?

4. Ellen brought 4 strings of fancy buttons. Each string had 16 buttons on it. How many buttons were there in all?

5. Jean had 20 blueprints of leaves. She wanted to mount them on a big sheet of cardboard in 3 equal rows. (a) How many blueprints could she put in each row? (b) How many blueprints would be left over from the equal rows?

6. Ann brought a doll's quilt she had made. It had 6 rows of little squares, with 4 squares in each row. How many squares were there in the quilt?

7. Nancy brought a knitted scarf. It was 2 feet and 9 inches long. How many inches long was it?

8. Jerry wanted to put 60 of his best stamps in rows on a stamp sheet. He could get 8 stamps on each row. (a) How many full rows would he have? (b) How many stamps would be left?

9. Bill's hobby was sports. He brought 25 pictures of baseball players, 18 pictures of football players, and 13 pictures of tennis players. How many pictures did he bring?

10. Linda brought her collection of tiny animals. She has 47 in all. There were 19 animals she decided not to put in the show. How many did she put in?

11. The class started putting up the show at 3:10 and finished at 3:55. How many minutes did it take them to put it up?

12. Twenty-nine children from the Third Grade and 31 children from the Fifth Grade came to see the show. How many children came?

Dividing by 9 With Remainders

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

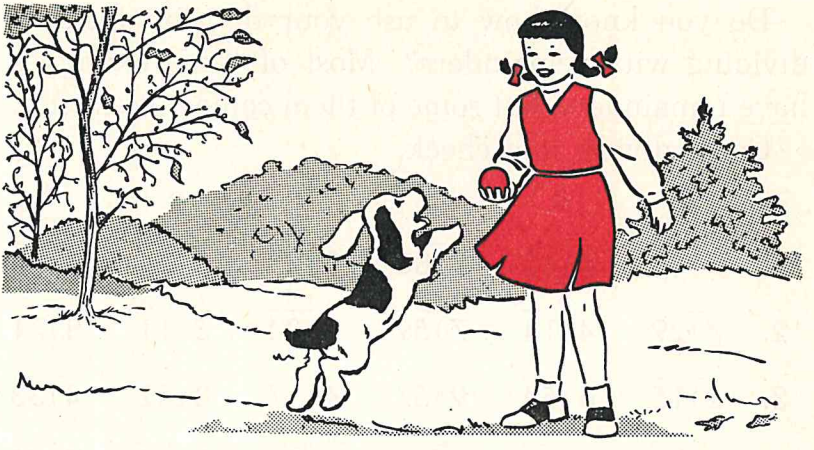
Copy the following numbers. In front of each number write the next smaller number that can be divided exactly by 9. The table will help you.

	a	*b*	*c*	*d*	e	*f*
1.	40	32	67	70	58	22
2.	85	44	25	34	89	19

Copy these examples, divide, and check.

3.	$9\overline{)21}$	$9\overline{)75}$	$9\overline{)39}$	$9\overline{)17}$	$9\overline{)87}$	$9\overline{)51}$
4.	$9\overline{)60}$	$9\overline{)24}$	$9\overline{)84}$	$9\overline{)33}$	$9\overline{)42}$	$9\overline{)66}$
5.	$9\overline{)48}$	$9\overline{)88}$	$9\overline{)30}$	$9\overline{)81}$	$9\overline{)57}$	$9\overline{)78}$
6.	$9\overline{)50}$	$9\overline{)16}$	$9\overline{)68}$	$9\overline{)35}$	$9\overline{)54}$	$9\overline{)71}$
7.	$9\overline{)65}$	$9\overline{)83}$	$9\overline{)59}$	$9\overline{)72}$	$9\overline{)52}$	$9\overline{)62}$

Ann's Dog



1. Ann's dog is named Spot. Ann bought him when he was a puppy. He cost $25. Ann had saved $7.50 for her dog, and her father paid the rest. How much did Ann's father pay?

2. Ann's father bought a collar and a leash for Spot. The collar cost $3.98 and the leash cost $1.45. What was the total cost of collar and leash?

3. Spot weighed only 4 pounds when Ann bought him. Three months later he weighed 13 pounds. How many pounds had he gained in weight? How many pounds a month was this on an average?

4. Ann feeds Spot dog biscuits that come in a box. The directions on the box say to give a dog every day 1 ounce of biscuits for each 2 pounds of the dog's weight. Spot now weighs 24 pounds. How many ounces of biscuits should he have?

Division With a Remainder

Do you know how to use your division facts in dividing with remainders? Most of these examples have remainders, but some of them come out exactly.

Copy, divide, and check.

	a	*b*	*c*	*d*	*e*	*f*
1.	$7\overline{)43}$	$6\overline{)45}$	$9\overline{)80}$	$8\overline{)31}$	$5\overline{)34}$	$8\overline{)45}$
2.	$7\overline{)29}$	$4\overline{)14}$	$7\overline{)59}$	$9\overline{)24}$	$3\overline{)11}$	$8\overline{)71}$
3.	$2\overline{)15}$	$6\overline{)54}$	$9\overline{)57}$	$6\overline{)17}$	$8\overline{)52}$	$4\overline{)33}$
4.	$5\overline{)36}$	$8\overline{)72}$	$6\overline{)50}$	$9\overline{)87}$	$5\overline{)22}$	$7\overline{)39}$
5.	$3\overline{)20}$	$7\overline{)54}$	$4\overline{)30}$	$6\overline{)29}$	$8\overline{)66}$	$5\overline{)19}$
6.	$2\overline{)19}$	$9\overline{)34}$	$6\overline{)40}$	$3\overline{)16}$	$7\overline{)40}$	$4\overline{)28}$
7.	$4\overline{)19}$	$8\overline{)20}$	$3\overline{)14}$	$5\overline{)26}$	$9\overline{)40}$	$3\overline{)25}$
8.	$2\overline{)13}$	$5\overline{)49}$	$9\overline{)50}$	$7\overline{)63}$	$3\overline{)29}$	$8\overline{)36}$
9.	$6\overline{)20}$	$3\overline{)23}$	$4\overline{)23}$	$7\overline{)20}$	$5\overline{)42}$	$2\overline{)17}$
10.	$7\overline{)27}$	$5\overline{)14}$	$4\overline{)38}$	$8\overline{)62}$	$6\overline{)34}$	$9\overline{)80}$

Using Division With a Remainder

1. Ann's Christmas vacation this year will last 16 days. (a) How many full weeks is this? (b) How many days over?

2. (a) How many full weeks are there in March? (b) How many days over?

3. Mr. Lane has 27 pennies to divide among Jean and 3 of her friends. (a) How many pennies will each girl get? (b) How many pennies will be left over?

4. If I have 19 cents, (a) how many 5-cent candy bars can I buy? (b) How many cents will I have left?

5. Don has 50 radishes to tie in bunches. He puts 6 radishes in a bunch. (a) How many bunches of radishes will he have? (b) How many radishes will be left over?

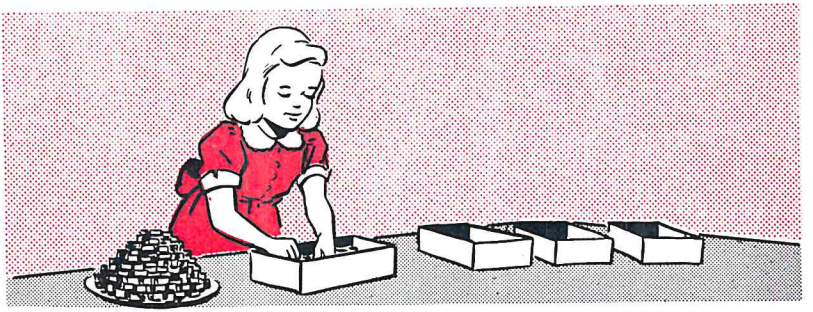
6. Sally has a strip of cloth 60 inches long to cut into 9-inch arm bands for a game. (a) How many arm bands can Sally cut? (b) How many inches of cloth will she have left?

7. Bill, Dave, and Tom bought a bag of marbles together. There were 20 marbles in the bag. They want to divide them equally. (a) How many marbles will each boy get? (b) How many marbles will be left over?

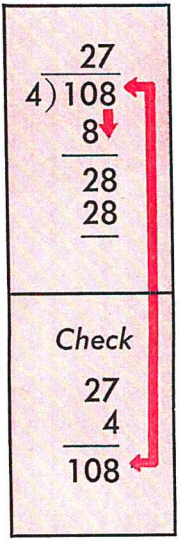
8. Sue has made 36 pieces of fudge. She wants to put them in little boxes to go into Christmas stockings. She will put 8 pieces in each box. (a) How many boxes will she fill? (b) How many pieces will be left over for Sue to eat?

9. Bob has 28 eggs. (a) How many orders for a half-dozen eggs each can he fill? (b) How many eggs will he have left over?

Bringing Down Numbers in Division



1. Sue has made 108 pieces of candy to sell, to help make money for a school trip. She wants to pack the candy in 4 boxes, with the same number of pieces in each box. To find how many pieces she should put in each box, divide 108 by 4.



First, divide 10 by 4. You know the three steps:

(1) Select the quotient, 2.

(2) Multiply the divisor, 4, by the 2.

(3) Subtract to find your remainder. Here the remainder is 2.

Now there is a new step *(4)*. *Bring down* the 8 of the 108—that is, write 8 after the remainder 2 to make 28 ones.

Then divide 28 by 4. $28 \div 4 = 7$. Write 7 in your quotient in the ones place. The remainder is 0. You need not write it.

How do you check? How many pieces go in each box?

Copy, divide, and check.

	a	b	c	d	e
2.	$5\overline{)290}$	$3\overline{)207}$	$6\overline{)276}$	$8\overline{)376}$	$7\overline{)525}$
3.	$9\overline{)585}$	$5\overline{)340}$	$7\overline{)448}$	$4\overline{)316}$	$6\overline{)522}$
4.	$8\overline{)520}$	$9\overline{)873}$	$2\overline{)192}$	$7\overline{)266}$	$9\overline{)567}$
5.	$5\overline{)460}$	$9\overline{)432}$	$8\overline{)736}$	$4\overline{)140}$	$2\overline{)150}$
6.	$3\overline{)252}$	$6\overline{)192}$	$9\overline{)225}$	$7\overline{)203}$	$5\overline{)235}$
7.	$4\overline{)336}$	$3\overline{)225}$	$8\overline{)664}$	$7\overline{)154}$	$9\overline{)144}$
8.	$5\overline{)195}$	$6\overline{)354}$	$2\overline{)92}$	$8\overline{)136}$	$7\overline{)336}$
9.	$6\overline{)108}$	$9\overline{)432}$	$4\overline{)76}$	$5\overline{)85}$	$8\overline{)304}$
10.	$7\overline{)189}$	$6\overline{)444}$	$9\overline{)855}$	$4\overline{)152}$	$8\overline{)448}$
11.	$9\overline{)243}$	$7\overline{)455}$	$5\overline{)230}$	$8\overline{)392}$	$3\overline{)117}$
12.	$6\overline{)216}$	$4\overline{)304}$	$7\overline{)273}$	$8\overline{)216}$	$3\overline{)234}$

Can You Find These Answers?

1. What is the quotient of 324 divided by 9?
2. What is the difference between 503 and 467?
3. What is the sum of 829 and 571?
4. What is the product of 8 and 120?
5. How much larger than 76 is 205?
6. How many 8's are there in 128?
7. What is one fourth of 2 dozen?
8. $5.00 is how much more than $3.09?

Division With a Final Remainder

$$\begin{array}{r} 52 \text{ r } 1 \\ 7\overline{)365} \\ 35 \\ \hline 15 \\ 14 \\ \hline 1 \end{array}$$

Check

$$\begin{array}{r} 52 \\ \times\ 7 \\ \hline 364 \\ +\ 1 \\ \hline 365 \end{array}$$

1. Bob knows there are 365 days in most years. He wants to find out how many weeks there are in a year. He divides 365 by 7.

First he divides 36 tens by 7. What is the remainder?

Then he divides 15 ones by 7. The *final* remainder is written as "*r* 1" after the quotient, 52.

How is this example checked?

How many full weeks are there in a year? How many days over?

Copy, divide, and check.

	a	b	c	d	e
2.	$3\overline{)86}$	$4\overline{)71}$	$2\overline{)97}$	$5\overline{)89}$	$4\overline{)93}$
3.	$2\overline{)79}$	$3\overline{)106}$	$7\overline{)130}$	$2\overline{)153}$	$8\overline{)141}$
4.	$6\overline{)195}$	$3\overline{)209}$	$4\overline{)279}$	$9\overline{)580}$	$8\overline{)361}$
5.	$7\overline{)262}$	$4\overline{)199}$	$5\overline{)433}$	$6\overline{)299}$	$5\overline{)472}$
6.	$3\overline{)142}$	$8\overline{)691}$	$4\overline{)342}$	$7\overline{)345}$	$9\overline{)355}$
7.	$8\overline{)559}$	$6\overline{)527}$	$9\overline{)800}$	$7\overline{)472}$	$5\overline{)326}$
8.	$3\overline{)239}$	$8\overline{)185}$	$6\overline{)395}$	$5\overline{)164}$	$9\overline{)140}$
9.	$7\overline{)486}$	$6\overline{)575}$	$9\overline{)245}$	$8\overline{)605}$	$9\overline{)421}$

Using Zeros in Division

1. There are 612 pupils in Larry's school. About half of them are boys. To find about how many boys there are in the school, divide 612 by 2.

$$2\overline{)612}\quad 306$$

Do you see why there is a zero in the quotient in the tens place, over the 1? About how many boys are there in Larry's school?

How do you check this answer?

2. Don has 125 lettuce plants that he wants to set out in 6 equal rows. To find how many plants he should set in each row, divide 125 by 6.

$$\begin{array}{r} 20\text{ r }5 \\ 6\overline{)125} \\ 12 \\ \hline 5 \end{array}$$

Do you see why you write a zero over the 5, in the ones place? Check the answer.

Copy these examples, divide, and check.

	a	*b*	*c*	*d*	*e*
3.	$4\overline{)828}$	$7\overline{)763}$	$5\overline{)544}$	$3\overline{)926}$	$2\overline{)812}$
4.	$3\overline{)1227}$	$5\overline{)1025}$	$8\overline{)2416}$	$6\overline{)3043}$	$9\overline{)1847}$
5.	$4\overline{)123}$	$6\overline{)165}$	$8\overline{)293}$	$5\overline{)454}$	$7\overline{)426}$
6.	$9\overline{)332}$	$3\overline{)2115}$	$4\overline{)1639}$	$7\overline{)335}$	$8\overline{)407}$
7.	$6\overline{)1854}$	$5\overline{)237}$	$7\overline{)565}$	$9\overline{)814}$	$6\overline{)965}$
8.	$9\overline{)544}$	$8\overline{)635}$	$7\overline{)3524}$	$9\overline{)135}$	$8\overline{)3264}$

Using Measures and Fractions

Here are some quickies. Just tell the answers, or write them on your paper. See if you can solve all the problems in your head.

1. Nancy promised to practice for half an hour. She has practiced 10 minutes. How many minutes more must she practice?

2. Jill has picked 9 red roses and 6 white roses. (a) How many roses has she picked? (b) How many more than a dozen roses is this?

3. Ann had a piece of ribbon 1 yard long. She cut off a piece 16 inches long to make a sash for her doll. How many inches were left?

4. Bill had a candy bar. He gave Jerry half a bar. What part of a bar did Bill have left?

5. Apples are selling for 9¢ a pound. Sally has a quarter. (a) How many whole pounds of apples can she buy? (b) How much money will she have left after she buys the apples?

6. It is now 6:08 p.m. Mother says dinner will be ready in 12 minutes. What time will that be?

7. Jean came to play with Ann. She said she could stay for an hour. The girls have been playing 40 minutes. How many more minutes may Jean stay?

8. Don had a dozen ears of corn to sell. He sold $\frac{1}{4}$ dozen. What fraction of a dozen ears did he have left? $(1 - \frac{1}{4} = ?)$

9. Don picked 28 pints of raspberries for his father. How many quarts did he pick?

10. Jean and Ann had 7 cookies to share. How many cookies should each girl get?

11. Mrs. Gray bought a dozen glasses. When she got home, she found that 2 of the glasses were broken. How many glasses were left?

12. Sally earns her weekly allowance by helping with the dishes. If she gets 10¢ a day, how much does she get a week?

13. Jean is making some posters. They must be 2 feet long and a foot and a half wide. (a) How many inches long must they be? (b) How many inches wide must they be?

14. Bob has an order for 1 dozen eggs. He has two more orders for $\frac{1}{2}$ dozen eggs each. How many dozen eggs does Bob need to fill all three orders for eggs? ($1 + \frac{1}{2} + \frac{1}{2} = ?$) Prove you are right, by drawing a picture.

15. Bob and Sue are saving to buy a radio. Their father has promised to pay $\frac{1}{4}$ of the cost. (a) What part of the cost must Bob and Sue pay? (b) If the radio costs $12, how much will this be?

16. Don has picked 9 ears of corn. He has an order for a dozen ears. (a) How many more ears of corn must he pick? (b) What fraction of a dozen ears must he pick?

17. Larry is 4 ft. 11 in. tall. Judy is 4 ft. 6 in. tall. How many inches taller is Larry?

Can You Work With Numbers?

Diagnostic Check Test 3A

This test will show you how much you have learned so far this year about addition, subtraction, multiplication, and division. Work carefully and be sure to check each example.

Copy and add.

	a	*b*	*c*	*d*	*e*
1.	359 409 726 215	1907 828 94 2380	\$ .49 6.28 24.32 1.87	\$ 3.29 12.14 6.36 18.98	\$ 6.90 17.40 .65 4.28

Copy and subtract.

2.	306 87	980 273	1249 354	\$4.00 3.41	\$24.25 9.68

Copy and multiply.

3.	60 4	39 2	87 5	206 9	156 7
4.	\$ .29 3	\$ .95 9	\$2.90 8	\$3.07 6	\$6.75 8

Copy and divide.

5.	$3\overline{)26}$	$4\overline{)74}$	$8\overline{)304}$	$7\overline{)565}$	$6\overline{)449}$

Find:

6.	$\frac{1}{5}$ of 75	$\frac{1}{2}$ of 720	$\frac{1}{4}$ of 816	$\frac{1}{6}$ of 300	$\frac{1}{9}$ of 108

Do You Understand Numbers?

Diagnostic Check Test 3B

This test will show you how much you understand about the meaning of numbers and what numbers do.

1. How many eighths of an inch are in one inch?

2. How many quarter inches are there in $\frac{1}{2}$ inch?

3. Which fraction is larger, $\frac{1}{8}$ or $\frac{1}{4}$?

4. How many thirds are there in 1?

5. Which is more, $\frac{3}{4}$ doz. eggs or 8 eggs?

6. 48 is how many times as large as 6?

7. How much larger is 75 than 68?

8. What number is 9 more than 36?

9. How many 6's are there in 96?

10. How many inches does 1 ft. 4 in. equal?

11. Which is longer, 1 yard or 32 inches?

12. Which is more, $\frac{1}{2}$ gallon or 3 quarts?

13. How many hours are there in $\frac{1}{3}$ of a day?

14. Write the number that means 3 thousands, 4 hundreds, 0 tens, 9 ones.

15. In \$7.80, there are ? dollars, ? dimes, ? cents.

16. Write the numbers that can be divided exactly by 8: 60 46 56 36 42 72 28 18

17. Write the missing products of 7:

7, 14, ?, 28, 35, ?, 49.

18. Write the next smaller number than 62 which can be divided exactly by 9.

Can You Use Numbers?

Diagnostic Check Test 3C

The test on these two pages will show you how well you can use numbers in problems. Think which process you should use to answer each question. Then find the answers.

1. Bill has $1.25. He says he still needs 22 cents for a bicycle horn. How much does the horn cost?

2. Sally is making 4 equal strings of beads for Christmas presents. She has 104 beads. How many beads should she put in each necklace?

3. Dave is 4 feet 8 inches tall. How many inches tall is he?

4. In September, Jim weighed 77 pounds. In March, he weighed 82 pounds. How many pounds in weight did Jim gain in the six months?

5. Bob hopes to save $5 a month out of the money he makes with his chickens. At that rate, how many dollars could he save in a year?

6. Our car went 162 miles on 9 gallons of gasoline. How many miles per gallon was this?

7. Jean has $10.50 in her bank. If she spends 79 cents of this for a birthday present for Tony, how much money will she have left?

8. Mr. Lane says it costs about 8 cents a mile to run his car. About how much will it cost him to drive 365 miles?

9. Dick made 6 door stops to sell for 75 cents each. If he sells them all, how much will he get?

10. Mr. Lane is buying a new car costing $2000. The dealer is giving Mr. Lane $975 for his old car. How much cash will Mr. Lane have to pay for the new car?

11. Tom and Joe have a lemonade stand. They sell lemonade for 5 cents a glass. One afternoon they took in 85 cents. How many glasses did they sell?

12a. Sally went to the store for her mother. She bought crackers for 27 cents, bread for 18 cents, and soap for 9 cents. How much did she spend?

12b. Sally gave the clerk a one-dollar bill for the things she bought. How much change did she get?

13. Jerry has 52 stamps to put in his trading book. If he puts 8 stamps in a row, (a) how many rows will the 52 stamps fill? (b) How many stamps will be left?

14. Ellen paid $1.20 for a half-gallon of ice cream for her party. (a) How many quarts of ice cream did she buy? (b) How much a quart did she pay?

15. Jerry bought a sheet of 3-cent stamps for his mother. There were 5 rows of stamps with 10 stamps in each row. (a) How many stamps did Jerry get? (b) How much did they cost?

16. Sam sold one rabbit for 75 cents and another for $1.25. (a) How much did he get for both rabbits? (b) What was the average price per rabbit?

Dividing Dollars and Cents

$$\begin{array}{r} \$\ .64 \\ 3\overline{)\$1.92} \\ 18 \\ \hline 12 \\ 12 \\ \hline \end{array}$$

Check

$\$\ .64 \times 3 = \$1.92$

1. Bob got \$1.92 for 3 dozen eggs. To find the price per dozen, divide \$1.92 by 3.

You cannot divide 1 by 3, so you divide 19 dimes by 3. Write the quotient figure, 6, just above the 9, in the dimes place. There is a remainder of 1 dime, or 10 cents. Bring down the 2 cents beside the 1 dime, making 12 cents to divide by 3. How do you finish the division? How much a dozen did Bob get for his eggs?

Copy, divide, and check. Some examples will divide exactly and some will have remainders.

	a	*b*	*c*	*d*	*e*
2.	$4\overline{)\$\ .96}$	$3\overline{)\$\ .81}$	$5\overline{)\$\ .70}$	$2\overline{)\$\ .92}$	$6\overline{)\$\ .90}$
3.	$7\overline{)\$4.55}$	$9\overline{)\$4.68}$	$6\overline{)\$2.70}$	$8\overline{)\$2.72}$	$5\overline{)\$4.45}$
4.	$9\overline{)\$5.76}$	$4\overline{)\$3.72}$	$7\overline{)\$6.09}$	$8\overline{)\$6.00}$	$9\overline{)\$2.43}$
5.	$7\overline{)\$7.63}$	$3\overline{)\$1.04}$	$4\overline{)\$\ .57}$	$6\overline{)\$5.58}$	$8\overline{)\$5.52}$
6.	$2\overline{)\$1.91}$	$4\overline{)\$3.15}$	$5\overline{)\$3.00}$	$9\overline{)\$7.20}$	$7\overline{)\$2.38}$
7.	$5\overline{)\$1.86}$	$3\overline{)\$2.57}$	$6\overline{)\$4.20}$	$6\overline{)\$1.97}$	$5\overline{)\$1.28}$
8.	$6\overline{)\$4.56}$	$4\overline{)\$2.24}$	$9\overline{)\$8.10}$	$3\overline{)\$1.05}$	$6\overline{)\$4.80}$

Using Arithmetic in School

You *use* arithmetic in school every day. See how many of these problems about school you can do as quickies.

1. There are 29 pupils in Tom's room. One morning Tom's teacher handed him 3 dozen new pencils and asked him to give one to each child. How many pencils are 3 dozen pencils? How many pencils should Tom bring back to the teacher?

2. Each of the 29 children has a box of 8 colored pencils. How many colored pencils are there in all?

3. Ann is in school from 9:00 a.m. until noon, and from 1:00 p.m. until 3:00 p.m. How many hours is she in school every school day?

4. Sam is in school for 6 hours every school day. How many hours does he spend in school every school week?

5. This morning, Dave's class worked on their social studies unit from 9:15 until 10:00. How many minutes did they spend on social studies?

6. If each of the 27 pupils in Nora's room gets one pencil a month, how many pencils will the class get in 9 months?

7. On the playground, Bill's team played four innings of softball. They scored 4, 0, 3, and 5 runs. How many runs did they make in all? What was the average number of runs per inning?

The Average of Several Things

It takes two steps to find the average of several things. First you add to find the total number of things. Then you divide to find the average number.

1. On a trip, the Lanes drove 28 miles the first hour, 42 miles the second hour, and 29 miles the third hour. To find how many miles an hour they averaged, first add to find how many miles they drove in all. Then divide by 3. How many miles an hour had they averaged?

2. Peggy played 4 games of ringtoss. In the first game she scored 19 points, in the second game 25 points, in the third 7 points, and in the last game 25 points. (a) How many points did she score in all? (b) How many points per game did she average?

3. Bob's hens laid 12 eggs on Monday, 18 on Tuesday, 20 on Wednesday, 14 on Thursday, and 16 on Friday. Find (a) the total number of eggs for the five days, and (b) the average number per day.

4. Bob sold 3 spring chickens. He got \$1.04, 82¢, and 96¢ for them. Find (a) what Bob got for all three chickens, and (b) the average price he got per chicken.

5. Bill's baseball team played 5 games last month. In these games they scored 9 runs, 6 runs, 15 runs, 0 runs, and 5 runs. Find (a) the total number of runs and (b) the average number of runs per game.

6. On a trip, Allen took 15 pictures the first day, 9 the second day, and only 3 the third day. (a) How many pictures did he take in all? (b) How many did he take each day, on the average?

7. In the five school days this week, Jill has spent for her lunches 28 cents, 30 cents, 25 cents, 21 cents, and 16 cents. Find (a) the total cost of her lunches this week, and (b) the average cost of the lunches.

8. Nora got 3 books for her birthday. One book had 175 pages, one had 127 pages, and one had 208 pages. (a) What was the total number of pages in the 3 books? (b) How many pages had each book, on the average?

9. Larry weighs 87 pounds, Jerry weighs 79 pounds, Allen weighs 92 pounds, and Tony weighs 102 pounds. (a) What is the total weight of the four boys? (b) What is their average weight?

10. Joe's family will buy him his own trumpet if he saves part of the money for it. In 4 weeks Joe saved 65¢, $1.20, 75¢, and $1. Find (a) how much Joe saved in 4 weeks and (b) how much he saved per week, on the average.

11. This week, Nancy has practiced the following numbers of minutes each day: 25, 35, 40, 20, 34, 38. (a) How many minutes in all has Nancy practiced? (b) How many minutes a day has she averaged?

Pages 294 and 295 provide enrichment material which can be used after this page.

What Is the Hidden Question?

In each of these problems, there are really two questions to answer. But only the second question is written for you. The other question is hidden in the problem. You must answer the hidden question before you can answer the written question. For example, in Problem 1, you must find how many fish all three boys caught before you can find how many fish each boy got as his share.

Before you work each problem, think what is the hidden question. Then work the two steps and find the answer.

1. Don, Bob, and Sam went fishing. Sam caught 13 fish, Don caught 9 fish, and Bob caught 8 fish. They divided up the fish equally. How many fish did each boy get as his share?

2. Mrs. Lane bought a dozen cupcakes for 5 cents each and a quart of milk for 21 cents. How much did she spend in all?

3. We put 19 blue balls and 15 red balls on our Christmas tree. When we took the tree down, there were only 28 balls left. How many balls had been broken?

4. Don is paid 35 cents an hour for helping his father pick apples in the fall. One week he worked 2 hours Friday afternoon and 7 hours on Saturday. How much did he earn on those two days?

5. Bill has 39 cents in his pocket. He wants to buy 3 toy trucks costing 15 cents each. How much more money does he need?

6. Jean and Tony want a game that costs a dollar. Jean has 38 cents and Tony has 53 cents. How much money do they still need to buy the game?

7. Don raised some watermelons in his garden. He sold one watermelon for 45 cents and another for 75 cents. What was the average price?

8. Jerry is mailing a package that requires 33 cents' postage. He has a 15-cent stamp and some 3-cent stamps. How many 3-cent stamps will he need to put on with the 15-cent stamp?

9. Ellen's mother took Ellen and 3 of her friends to the movies. The ticket for Ellen's mother cost 65 cents and the tickets for the girls were 35 cents each. How much did all the tickets cost?

10. At the fair, merry-go-round tickets were 5 cents each, or 6 for a quarter. How much will Sally save by buying 6 tickets for a quarter instead of buying them one at a time?

11. Sue was helping her mother sell fruit and vegetables at their road stand. She sold a customer 5 pounds of tomatoes at 12 cents a pound. The customer handed Sue a dollar bill. How much change should Sue give him?

12. Four 8-cent stamps and a 15-cent stamp were on a package. What was the total cost of the postage?

What Two Processes Do You Use?

Here are some more problems with hidden questions. To solve each problem, you use two processes. In Problem 1, you *add* to answer the hidden question (How much did Sally spend?), then you *subtract* to find the answer to the problem.

Number your paper 1 to 12. After each number, write the two signs showing the processes you use to solve that problem. After 1, you write + −. Then work the problem and write the answer.

1. Sally bought sugar for 86 cents and flour for $1.25. She gave the clerk a five-dollar bill. How much change did Sally get?

2. The heights of the 5 boys on a basketball team are 64 inches, 61 inches, 58 inches, 60 inches, and 57 inches. Find their average height.

3. Bill wants to buy a tennis racket for $5.79 and 3 tennis balls costing 55 cents each. How much must he pay in all for the racket and the balls?

4. Peggy, Jerry, and Tom looked for hickory nuts at a picnic. Peggy found 30 nuts. Jerry found 19 and Tom only 7. How many more nuts did Peggy find than the two boys together?

5. Ann went downtown with a dollar to spend. She bought a doll dress for 65 cents. How many doll dishes costing 5 cents each could she buy with the rest of the money?

6. At our circus, we sold 38 glasses of lemonade for 5 cents a glass. It cost us 98 cents to make the lemonade. How much money did we make?

7. At the road stand, Sue sold a customer some tomatoes for 65 cents and some corn for 48 cents. The customer handed Sue $1.25. How much change should Sue give him?

8. Jill picked 50 flowers. She put 14 of them in a vase, and sold the rest for 3 cents apiece. How much did Jill get for the flowers she sold?

9. Sam's father drove for 3 hours at an average speed of 40 miles an hour. He found that he had used 6 gallons of gasoline. How many miles had he got per gallon of gasoline?

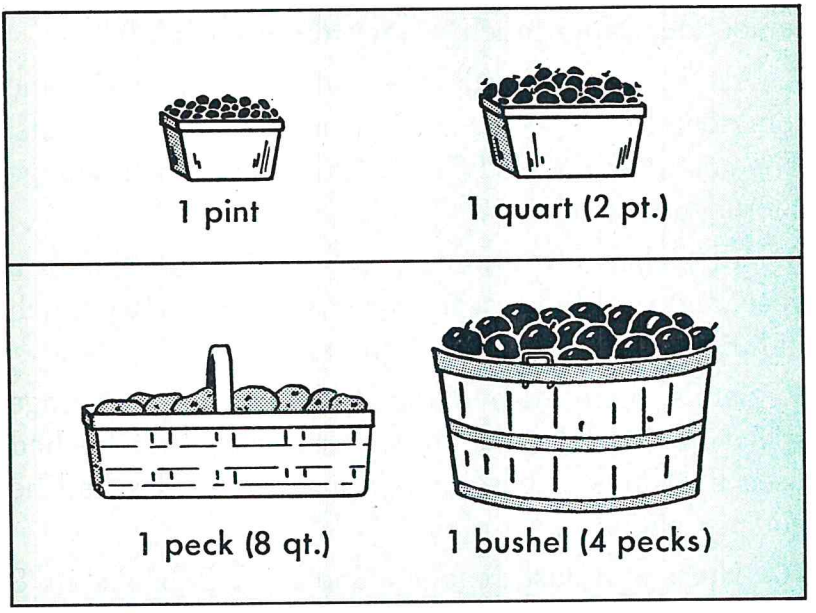
10. Nora is a fast reader. She read 2 books in 8 hours. Each book had 160 pages. How many pages did she read an hour, on the average?

11. Sue is helping her mother fix corn-on-the-cob for freezing in their deep-freeze unit. They have made up 16 packages with 6 ears of corn in each package, and one package with 8 ears. How many ears of corn are ready to freeze?

12. Jill was making tickets for the class play. One afternoon she made 18 tickets. The next afternoon she made 14 tickets. The third afternoon she made 22 tickets. What was the average number of tickets she made in an afternoon?

Pages 296 and 297 provide enrichment material which can be used after this page.

Using Dry Measures



You have used pints and quarts to measure liquids like milk. Pints and quarts are also used as **dry measures**—that is, to measure "dry" things like berries, beans, and fruit. The *dry* pint and quart are a little larger than the *liquid* pint and quart.

1. Peggy's father bought her a pony. The pony eats two quarts of oats a day. How many days will a peck of oats last?

2. There are 4 pecks in a bushel. Then how many quarts are there in a bushel?

3. How many days will a bushel of oats last if a pony eats 2 quarts a day?

4. Don sold 4 quarts of shelled lima beans. Since he had no quart boxes, he measured them in pint boxes. How many pints equal 4 qt.?

5. Don was bringing some apples to fill a bushel basket. He brought them in a peck basket. How many trips did he make to fill the bushel basket?

6. Tom's mother bought a bushel of cherries. To keep the cherries from crushing, they were put into quart boxes. How many quart boxes did they fill?

7. There are 60 lb. of shelled beans in a bushel. Mrs. Lane bought 10 lb. of shelled beans for 90¢. (a) What part of a bushel did she buy? (b) At this rate, how much is a bushel of shelled beans worth?

8. Don sold a half-bushel basket of apples. How many pecks was this? How many quarts?

9. Plums are often sold in quart boxes. One morning, Don picked a peck basket full of plums. How many quart boxes could he fill?

10. Mrs. Lane saw some peaches in the store for $1.75 a half bushel. At this rate, how much would a bushel of peaches cost?

11. A bushel of apples weighs about 48 pounds. (a) Six pounds of apples are what part of a bushel? (b) If apples are $2.40 a bushel, how much should Don charge for 6 pounds of apples?

12. Bill's mother bought a half bushel of strawberries in quart boxes. How many boxes did she buy?

Pages 298 and 299 provide enrichment material which can be used after this page.

What Measures Do You Use?

You use various units to measure things you buy and do. Sometimes more than one unit may be used. For example, you can measure the length of a room in feet or yards. You may buy oranges by the pound or by the dozen.

Tell what unit of measure you generally use to measure:

1. The distance between two cities.
2. The length of a piece of cloth.
3. The length of a board.
4. The width of a board.
5. How tall you are.
6. How much you weigh.
7. The weight of a letter you are going to mail.
8. The time needed to cook muffins.
9. The time it takes to run a short race.
10. The length of your vacation.
11. How old you are.

On your paper, write the unit of measure you use in buying each of the following things.

	a	*b*	*c*
12.	meat	gasoline	ice cream
13.	paint	raspberries	doughnuts
14.	milk	bananas	nails
15.	eggs	garden hose	roses
16.	cheese	pepper	ribbon

A Short Way To Write Dates

Instead of writing dates out, it is shorter just to use numbers. 5/16/54 means May 16, 1954, because May is the 5th month of the year.

1. The order of the months is given on page 49. What is the 3rd month? The 10th month? The 7th month?

On your paper, write the place in the year of each of these months.

	a	*b*	*c*	*d*
2.	September	November	March	May
3.	February	October	August	June
4.	December	January	April	July

Write each of these dates the short way.

	a	*b*
5.	June 24, 1953	March 6, 1959
6.	September 1, 1955	December 10, 1960
7.	May 5th, 1957	July 31st, 1950
8.	October 20th, 1933	December 12th, 1911
9.	February 14th, 1962	April first, 1944
10.	August third, 1958	January second, 1954

Write each of these dates out.

	a	*b*	*c*	*d*
11.	4/8/62	9/16/07	6/16/68	10/20/30
12.	3/3/33	11/7/52	2/29/56	5/18/39

13. What holiday is 12/25 every year?

14. What holiday is 1/1 every year?

15. What holiday is 7/4 every year?

Using a Distance Table

	Allentown	Barrville	Greentown	Jonesburg	Park City	Riverdale	Eastbrook
Allentown		80	97	72	117	98	42
Barrville	80		163	59	47	137	108
Greentown	97	163		128	199	90	55
Jonesburg	72	59	128		83	85	73
Park City	117	47	199	83		167	144
Riverdale	98	137	90	85	167		69
Eastbrook	42	108	55	73	144	69	

Mr. Lane lives in Park City. He is going to drive to Barrville. He looks up the distance from Park City to Barrville on the table on his road map.

Do you see how he finds the distance is 47 miles? He looks *across* from Park City and *down* from Barrville, or *across* from Barrville and *down* from Park City.

Use the table to find these distances.

	a	*b*
1.	Allentown to Barrville	Allentown to Eastbrook
2.	Barrville to Greentown	Riverdale to Allentown
3.	Park City to Riverdale	Eastbrook to Riverdale
4.	Jonesburg to Riverdale	Park City to Jonesburg
5.	Greentown to Eastbrook	Greentown to Riverdale

Fractions of Measures

How much do you remember about fractions of measures?

1. How many inches are there in $\frac{1}{3}$ of a foot? In $\frac{2}{3}$ of a foot?

2. Is $\frac{3}{4}$ foot more or less than 8 inches?

3. Which is more, 4 inches or $\frac{1}{4}$ foot?

4. How many inches are there in $\frac{1}{3}$ of a yard? In $\frac{2}{3}$ of a yard?

5. Which is more, 28 inches or $\frac{2}{3}$ of a yard?

6. Is $\frac{3}{4}$ yard more or less than 28 inches?

7. Which is less, $\frac{2}{3}$ yard or $\frac{3}{4}$ yd.?

8. How many minutes are there in $\frac{2}{3}$ hour?

9. Which is more, $\frac{3}{4}$ hour or 40 minutes?

10. Is $\frac{2}{3}$ hour more or less than $\frac{3}{4}$ hour?

11. How many quarts are there in $\frac{1}{2}$ bushel?

12. Is $\frac{1}{8}$ bushel more or less than 6 quarts?

13. How many quarts are there in $\frac{3}{4}$ bushel?

14. How many ounces are there in $\frac{3}{4}$ pound?

Copy and finish these examples.

	a	*b*	*c*
15.	$\frac{1}{2}$ ft. = ? in.	$\frac{1}{2}$ yd. = ? in.	$\frac{1}{2}$ hr. = ? min.
16.	$\frac{1}{3}$ ft. = ? in.	$\frac{1}{3}$ yd. = ? in.	$\frac{1}{3}$ hr. = ? min.
17.	$\frac{1}{4}$ ft. = ? in.	$\frac{1}{4}$ yd. = ? in.	$\frac{1}{4}$ hr. = ? min.
18.	$\frac{2}{3}$ ft. = ? in.	$\frac{2}{3}$ yd. = ? in.	$\frac{2}{3}$ hr. = ? min.
19.	$\frac{3}{4}$ ft. = ? in.	$\frac{3}{4}$ yd. = ? in.	$\frac{3}{4}$ hr. = ? min.
20.	$\frac{1}{4}$ bu. = ? qt.	$\frac{3}{4}$ bu. = ? qt.	$\frac{3}{4}$ lb. = ? oz.

Using Money Numbers

Can you use dollars and cents in problems? You will need all four processes to work the problems on this page.

1. Bill wants a baseball costing $1.69 and a bat costing $2.25. How much money must he have to buy both?

2. How much must Sally pay for 3 pounds of cheese costing 55¢ a pound?

3. Jean saw in a store window a handbag marked $3.89. The sign said the bag had been reduced from $5. How much would Jean save by buying the bag at the reduced price?

4. In a bakery, half of an orange layer cake is marked $.75. How much should a whole layer cake cost at that rate?

5. Bill's softball team needs some more softballs. At a special sale, they can get 6 balls for $7.50. How much is this for each ball? If the regular price of these balls is $1.50, how much will the boys save on each ball by buying 6 balls?

6. Peggy has saved $4.75. She wants to buy a pair of ice skates costing $6.50. How much money does she still need?

7. Bob sold 3 chickens. He charged $2.30 for the first chicken, $2.06 for the second, and $1.85 for the third. Find the average price per chicken.

Making Up Questions for Problems

The problems on this page are not complete. They do not have any questions. Finish each problem by writing a question for it on your paper. Then write the answer to each question.

1. Bill wants a Scout knife that costs $1.45. He has only 96 cents.

2. Dave sells magazines. He makes 3 cents on each magazine he sells. He wants to earn enough to buy a game costing 75 cents.

3. Jill bought 28 flower bulbs. They cost four cents apiece.

4. On a recent trip, the Lanes drove 102 miles in the first 3 hours.

5. Nancy can get a pair of roller skates for $2.29. A better pair of skates costs $3.10.

6. Ann has 24 pictures to make into a social studies booklet. Each page of the booklet will hold 4 pictures.

7. Jean wants to buy Christmas presents for her parents. A necktie for her father will cost $1.25 and a scarf for her mother will cost 89 cents.

8. Joe practiced on his trumpet for 25 minutes yesterday and 15 minutes today.

9. Jerry has gone to the station to meet his father. The train on which his father is coming is due at 8:38 but it is reported 15 minutes late.

Telling the Process

You don't need to find any answers for these problems. Just decide which process you must use to solve each problem. Number your paper 1 to 18. After each number write A, S, M, or D to show whether you add, subtract, multiply, or divide.

1. You know how much a bicycle costs and how much you have saved toward buying it. Which process do you use to find how much money you still need?

2. What process do you use to find the total cost of a bat and ball if you know the price of the bat and the price of the ball?

3. You know how many miles you drove in 4 hours. What process do you use to find how many miles an hour you went, on the average?

4. You know how many miles you drove in the morning and how many miles you drove in the afternoon. How do you find how many miles you drove that day?

5. You know how much one ice cream cone costs. How do you find how many ice cream cones you can buy for a quarter?

6. You know the price of a quart of oil. What process do you use to find the cost of a gallon of oil?

7. You know the number of days until your birthday. What process do you use to find how many weeks till your birthday?

8. You know how many oranges your family eats for breakfast. How do you find how many oranges your family eats in a week?

9. You know how many pounds you weighed a year ago and how many pounds you weigh now. How do you find how many pounds you have gained or lost?

10. Which process do you use to find the total of the weights of two boys?

11. You know how many pages there are in a book and how many pages you have read. How do you find how many pages you still have to read?

12. You know how many miles an hour you can walk. You know how many miles you want to go. How do you find how many hours it will take you to walk there?

13. Which process do you use to find how much more one sweater costs than another sweater?

14. You know how much money you had in your bank and how much more you have just put in. How do you find how much you now have in your bank?

15. You know how much a pound of cheese costs. How do you find the cost of 3 pounds of cheese?

16. Five boys are going to share the cost of a trip they have taken. What process do you use to find how much each boy should pay?

17. How do you find how much taller one girl is than another girl?

18. How do you find how many pages there are in all in two books you are reading?

Selecting the Right Answers

After each problem, several answers are given. One answer is correct. Choose the answer which seems sensible to you, and write it on your paper. Then solve the problem to see if the answer you picked is the right one. Tell which process was used in each problem.

1. Jill is selling peaches at her father's road stand. Each basket of peaches sells for 75¢. How much should Jill charge for 3 baskets?

(25¢ or $2.25 or 78¢)

2. Jill's mother paid her $1.00 for helping to clean the house. Jill worked 4 hours. How much an hour did she earn? ($.25 or $4.00 or 96¢)

3. Sam wants to buy a reel for his fishing rod. The reel costs $4.20. Sam has saved $2.75. How much more money does he need?

($6.95 or $1.45 or $2.55)

4. Don sold some tomatoes for $1.35 and some green beans for 98¢. How much money did he get for both?

($.37 or $2.33 or $2.43)

5. Bill looked at two wagons in a store. One cost $9.45 and the other cost $8.89. How much cheaper was the second wagon? (56¢ or $1.56 or $18.34)

6. Jean is paid 25 cents an hour for baby sitting. How much will she earn in 5 hours?

($.30 or 20¢ or $1.25)

7. One week, Bob got $3.25 for the eggs he sold. He spent $1.90 of this amount for feed for his hens. How much money did he have left?

($5.15 or $2.35 or $1.35)

8. Nora wants a set of 6 books. The whole set costs $5.10. How much is this per book?

($.85 or $5.16 or $30.60)

9. At a sale, the price of canned peaches was reduced from 34 cents to 28 cents. Mrs. Lane bought 8 cans. How much did she save?

(62¢ or 26¢ or 48¢)

10. Sally bought 2 loaves of bread at 15 cents a loaf, and a quart of milk for 20 cents. How much did she spend in all? (50¢ or 37¢ or 35¢)

11. In three weeks last summer, Don earned $1.55, $2.05, and $3.30. On the average, how much did he earn per week? ($3.80 or $6.90 or $2.30)

12. Mr. Lane said he went 136 miles on 8 gallons of gasoline. How many miles a gallon was this?

(17 or 1088 or 128)

13. Dick built 2 model airplanes. The models cost 95 cents apiece. Dick spent another 19 cents for paint and other materials. What was the total cost?

($1.16 or $2.28 or $2.09)

14. At the fair, Sam and Bob spent 40 cents for hot dogs, 20 cents for orange drinks, and 26 cents for candy. If they divided the cost equally, what was each boy's share? (86¢ or 34¢ or 43¢)

Do You Understand Place Value?

How well do you understand the place value of numbers? "Place value" means that figures like 1, 2, 5, and 7 have different values according to where they are placed in a number.

1. In the number 47, the 4 is in *tens* place, so it has the value of 4 tens, or 40. The 7 is in *ones* place, so it has the value of 7 ones, or just 7. In the number 74, what value has the 7? The 4?

2. In the number 259, what value has the 5? What value has the 2? Which has the greater value, the 5 or the 9?

3. Suppose you left the 0 out in the number 103. What would the number be? Zero is sometimes called a "place holder." Do you see why?

4. The number 2487 means ? thousands, ? hundreds, ? tens, ? ones. Write the number which means 5 thousands, 1 hundred, 0 tens, 9 ones.

5 Write "one thousand sixty" in figures. What value has each figure?

6. The largest 3-figure number you can make with the figures 6, 4, and 9 is 964. Write the largest 3-figure number you can make with 7, 1, and 8.

7. What is the smallest 3-figure number you can make with 7, 1, and 8?

8. What is the largest 3-figure number you can make with three different figures?

9. Write the largest 3-figure number that you can.

10. Write the smallest 4-figure number you can.

11. What is the smallest 4-figure number you can make with *four different* figures?

12. Copy 976 + 384 + 729 + 90 in columns and add them. After you add the ones column, how many tens do you carry to the tens column? How many hundreds do you carry to the thousands column?

How many thousands are there in the sum? How many hundreds? How many tens? How many ones?

13. Subtract 2859 from 7436. You cannot take 9 ones from 6 ones, so you subtract 9 from how many ones? Next, you subtract 5 tens from how many tens? How many hundreds do you subtract from how many hundreds? What thousands do you subtract?

How many thousands, hundreds, tens, and ones are there in the remainder?

14. Multiply 647 by 8. After you multiply 7 ones by 8, how many tens do you carry to the tens place? How many tens do you multiply by 8? How many tens do you write down? How many hundreds do you carry?

15. Divide 270 by 6. Since you cannot divide 2 hundreds by 6, you divide 6 into how many tens? How many tens are left? Then you divide 6 into how many ones?

How many tens and ones are there in the quotient?

Practice in Copying Numbers

Can you copy numbers without making mistakes?

Do you write figures clearly, so that you are sure what each figure is?

Do you write figures in their correct places, so you know which figures are ones, tens, hundreds, and thousands?

Do you keep your columns straight for adding, so you won't get over into the wrong column?

The examples on this page will give you practice in copying numbers carefully.

Copy in columns, add, and check.

	a	*b*
1.	287 + 76 + 9 + 48	7 + 109 + 56 + 93 + 465
2.	1564 + 785 + 2738	2539 + 95 + 730 + 2398
3.	\$4.86 + \$5 + 94¢	\$17 + \$9.45 + 78¢ + \$4.16

Copy, subtract, and check.

	a	*b*	*c*
4.	123 − 67	140 − 59	604 − 86
5.	1048 − 309	1815 − 718	3073 − 689
6.	\$2.00 − \$.36	\$1.50 − 85¢	\$15 − \$14.58

Copy, multiply, and check.

7.	7 × 96	8 × 138	9 × 608
8.	5 × \$.87	6 × \$2.75	2 × \$12.50

Copy, divide, and check.

9.	87 ÷ 3	330 ÷ 6	1428 ÷ 7
10.	\$.54 ÷ 6	\$6.03 ÷ 9	\$6.32 ÷ 8

Making Up Problems

Can you make up problems for your classmates to solve? There are some suggestions on this page. Write some problems to read to the class or be ready to tell them. Be sure you know the answers to your own problems!

1. Make up an addition problem about two things you want to buy.

2. Make up a subtraction problem about saving money for a bicycle or something else you want.

3. Make up a multiplication problem about buying four pounds of meat at the store.

4. Make up a division problem about sharing the cost of a baseball.

5. Make up a problem about the number of pages in a book and the number of pages you have read.

6. Make up a problem about how many hours you spend in school every week.

7. Make up a problem about the number of marbles two boys have.

Make up problems for which these would be the questions:

8. How much more did the sweater cost than the socks?

9. How many children are there in both grades?

10. How many ice cream cones can I buy?

11. How much must I pay for 6 doughnuts?

12. How many pounds have I gained in the last year?

Multiplying by 10

3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 30	*Multiply* 3 10 30

1. Ten children are going on a picnic. The food committee wants to make 3 sandwiches for each child. To find how many sandwiches are needed, you can add the 3's, or you multiply 3 by 10. Are the sum and the product the same? How many sandwiches are needed?

40 + 40 + 40 + 40 + 40 + 40 + 40 + 40 + 40 + 40 = 400
Multiply: 40 10 400

2. Ten buses took the pupils of our school on a trip. Each bus held 40 children. To find how many children all the buses held, add ten 40's or multiply 40 by 10.

The product is the same as the sum. How many children can the 10 buses carry?

3. There is a short way of multiplying any number by ten. **To multiply a number by 10, just write zero after the number.**

The product of 10 × 17 is 170. What is the product of 10 × 49? Of 10 × 123?

Copy and write the products.

	a	*b*	*c*	*d*
4.	10 × 7	10 × 87	10 × 90	10 × 10
5.	10 × 12	10 × 24	10 × 237	10 × 865

Multiplying by Numbers Ending in 0

1. Don's father wants to carry 60 bushels of apples in his farm truck. Each bushel of apples weighs about 48 pounds. To find how many pounds 60 bushels weigh, multiply 48 by 60. You are finding sixty 48's.

$$\begin{array}{r} 48 \\ \times\ 60 \\ \hline 2880 \end{array}$$

You write 0 under the 0, to show there are no ones, then multiply 48 by the 6 tens. How many pounds will 60 bushels of apples weigh?

2. The auditorium in Larry's school has 20 rows of seats, with 30 seats in each row. To find how many seats there are in the auditorium, multiply 30 by 20.

$$\begin{array}{r} 30 \\ \times\ 20 \\ \hline 600 \end{array}$$

In the product, you write a zero under the zero to show there are no ones. Then multiply 30 by the 2 in the tens place. How many people will the auditorium seat?

Copy and multiply.

	a	*b*	*c*	*d*	*e*	*f*
3.	48 × 10	48 × 20	48 × 30	23 × 10	23 × 20	23 × 40
4.	35 × 30	49 × 40	67 × 40	56 × 80	97 × 30	74 × 60
5.	56 × 20	67 × 50	85 × 40	49 × 50	90 × 60	80 × 70
6.	64 × 90	50 × 60	75 × 70	106 × 30	120 × 60	180 × 50

Multiplying by Two-Figure Numbers

Long Way

$$\begin{array}{r} 36 \\ \times\ 4 \\ \hline 144 \end{array} \qquad \begin{array}{r} 36 \\ \times\ 10 \\ \hline 360 \end{array}$$

Add:

$$\begin{array}{r} 144 \\ +\ 360 \\ \hline 504 \end{array}$$

Short Way

$$\begin{array}{r} 36 \\ \times\ 14 \\ \hline 144 \\ 360 \\ \hline 504 \end{array}$$

← Don't write this zero.

1. Fourteen buses will carry children from one school to a play day. Each bus holds 36 children. To find how many children the 14 buses can carry, multiply 36 by 14.

Since 14 means 1 ten and 4 ones, there are really two multiplications to do. First, multiply 36 by the 4 ones. Then multiply 36 by the 1 ten, and add the two products, 144 and 360. This is the long way.

You can multiply by 14 a shorter way. Multiply 36 by 4. Then multiply 36 by 1 ten, and write this product under the other product. Add the two products. The answers are the same both ways.

$$\begin{array}{r} 36 \\ \times\ 27 \\ \hline 252 \\ 72 \\ \hline 972 \end{array}$$

2. Multiply 36 by 27. What are the two **partial products** (the products you get when you multiply by each figure of the multiplier)? The final zero of the 720 is not written.

How many ones are there in the product? How many tens? How many hundreds?

These five multiplication examples are started for you. Copy these examples and finish them.

	a	b	c	d	e
3.	48 16 288 48	75 28 600 150	90 37 630 270	68 29 612	91 56 546

Copy, multiply, and check.

4.	43 24	35 13	68 34	72 17	57 49
5.	35 58	76 65	39 79	42 93	19 83
6.	29 24	28 58	40 57	76 35	60 68
7.	75 47	94 60	86 19	85 76	49 38
8.	93 46	57 82	71 49	60 70	94 91
9.	86 70	84 58	64 48	82 95	72 68
10.	93 57	56 49	83 38	53 69	80 29

Pages 300 and 301 provide enrichment material which can be used after this page.

Using Arithmetic Every Day

Seven of these problems use multiplication. The others may be addition problems, or subtraction problems, or division problems. Decide which process you should use before you solve a problem.

1. We are making tickets for our school play. If each of the 24 boys and girls in our room makes 15 tickets, how many tickets will we have?

2. Last month, 32 new books were put in our library corner. Nora has read 19 of them already. How many books are left for her to read?

3. There are 14 tables in Ann's school lunchroom. Each table will seat 14 children. How many people does Ann's lunchroom hold?

4. Four dens of Cub Scouts went on a hike. The mothers bought 12 loaves of bread to make sandwiches. If there were 18 slices in each loaf, how many slices did they have for sandwiches?

5. In building some shelves, Dick had to saw a piece 53 inches long from a board 60 inches long. How much of the board did Dick have left?

6. Ann made 19 valentines and Jean made 24. How many more valentines did Jean make than Ann?

7. We are in school five hours every day. How many minutes a day is this?

8. Allen's watch reads quarter past 8, but it is 3 minutes slow. What is the correct time?

9. Nora has just borrowed a book from the school library for one week. The book has 245 pages in it. To finish it in a week, how many pages a day must Nora read?

10. Tom read the temperature when he came to school one winter morning. It was 68° in the classroom and 29° outside. How many degrees warmer was it indoors than out?

11. The Art Club decorated napkins for a school party. If each of the 15 club members made a dozen napkins, how many napkins did the club make in all?

12. It takes Tom 10 minutes to walk from his house to school. If he goes home for lunch each day, how many minutes a day does he spend walking to and from school?

13. Nancy practiced her piano lesson for 15 minutes on Friday and for an hour on Saturday. How many minutes did she practice on both days?

14. Nora has 85 cents. She wants to buy a book costing $1.50. How much money does she still need?

15. While he was helping at the road stand one day, Don sold 9 baskets of peaches for $1.25 a basket. How much did he get for all the peaches he sold?

16. Tom has a half-dollar, a quarter, and a dime. How much money has he in all?

17. If each car can carry 6 children, how many cars will be needed to take 42 children to a picnic?

Pages 302 and 303 provide enrichment material which can be used after this page.

Multiplying Money Numbers

$$\begin{array}{r} \$\ .39 \\ 10 \\ \hline \$3.90 \end{array}$$

1. Mrs. Lane wants to buy 10 packages of frozen peaches for a church supper. The peaches cost 39¢ a package. To find how much she must pay, multiply \$.39 by 10.

Look at the product. When you multiplied by 10, the 9 moved from *cents* place to *dimes* place, and the 3 moved from *dimes* place to *dollars* place. How many figures are there after the point in a money number? How much did Mrs. Lane pay?

To multiply a money number by 10, add a zero, then write the dollar sign and the point in the correct place.

Copy these examples and write the products.

	a	*b*	*c*
2.	$10 \times \$.24 = ?$	$10 \times \$.75 = ?$	$10 \times \$.68 = ?$
3.	$10 \times \$.50 = ?$	$10 \times \$.13 = ?$	$10 \times \$.91 = ?$
4.	$10 \times 57¢ = ?$	$10 \times 86¢ = ?$	$10 \times 99¢ = ?$

$$\begin{array}{r} \$\ .32 \\ 24 \\ \hline 128 \\ 64 \\ \hline \$7.68 \end{array}$$

5. Our art class needs 24 paint brushes. At 32¢ a brush, how much will they cost? To find out, multiply \$.32 by 24.

Do not worry about the dollar sign and the point until after you have multiplied. Then write the dollar sign and the point in the product. Where does the dollar sign always go? Where does the point always go? How much will the brushes cost?

6. Bill is collecting the money for a class trip. If 25 pupils each bring 40 cents for the trip, how much money should he collect?

7. Yesterday, Don sold 23 baskets of apples at 75¢ a basket. How much money did he take in?

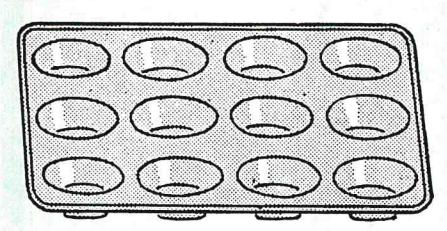
8. Joe gets part of his spending money in return for practicing his trumpet. Last month he practiced a total of 13 hours. If he gets 15 cents an hour for practicing, how much did he earn last month?

9. One month last summer, Ann's brother worked 29 hours cutting lawns. He got 65 cents an hour. How much did he earn that month?

Copy these examples and multiply. Remember to write the dollar sign and the point in each final product.

	a	*b*	*c*	*d*	*e*
10.	\$ .46 10	\$ .53 20	\$ .67 30	\$ .37 50	\$ .92 80
11.	\$ .48 25	\$ .38 38	\$ .25 46	\$ .63 67	\$ .57 54
12.	\$ .79 36	\$ .95 75	\$ .35 89	\$ .42 93	\$ .26 54
13.	\$ .80 69	\$ .84 47	\$ .17 27	\$ .94 68	\$ .65 38
14.	\$ .69 29	\$ .82 76	\$ .70 80	\$ .71 49	\$ .39 40

Checking Multiplication



1. This picture shows Sue's muffin pan. To find how many muffins the pan will hold, you can multiply both ways. You can say $3 \times 4 = 12$ or $4 \times 3 = 12$. One multiplication checks the other.

Example	*Check*
38	24
24	38
152	192
76	72
912	912

To check any multiplication, change the two numbers about and multiply again.

2. Multiply 38 by 24, and check by multiplying 24 by 38. The two products are the same.

3. Multiply \$.75 by 37. Check by multiplying 37 by 75. Did you get the same product both times? If not, go over your work until you find your mistake.

Copy, multiply, and check.

	a	*b*	*c*	*d*	*e*
4.	57 32	95 64	91 39	49 28	97 75
5.	\$ .36 85	\$ .47 46	\$ .82 47	\$ .68 92	\$ .36 76
6.	80 58	47 19	\$ .54 70	52 89	\$ .46 39

Can You Find the Missing Numbers?

See how much you remember about various kinds of arithmetic. Number your paper 1 to 40. Work these examples to find the missing numbers and write them on your paper.

1. $15 \times 38 = ?$
2. $\frac{1}{2}$ of $112 = ?$
3. $\frac{1}{3}$ yd. $= ?$ ft.
4. $\frac{1}{4}$ hr. $= ?$ min.
5. $397 + 1289 = ?$
6. $1007 - 869 = ?$
7. $\frac{1}{2}$ min. $= ?$ sec.
8. $7 \times ? = 63$
9. $18 + ? = 25$
10. $54 \div ? = 9$
11. $60 - ? = 48$
12. $\frac{1}{8}$ of $96 = ?$
13. $8 \times 0 = ?$
14. $1 \times 1 = ?$
15. $0 \div 6 = ?$
16. $5 + 0 = ?$
17. $0 + 0 = ?$
18. $0 \times 0 = ?$
19. $0 - 0 = ?$
20. $9 - 0 = ?$
21. $\frac{1}{3}$ ft. $= ?$ in.
22. $\frac{1}{2}$ yd. $= ?$ in.
23. 1 lb. $- 7$ oz. $= ?$ oz.
24. 4 wk. $= ?$ da.
25. $\frac{1}{4}$ yr. $= ?$ mo.
26. $\frac{3}{4}$ doz. $= ?$
27. $924 \div 3 = ?$
28. $\frac{1}{5}$ of a dollar $= ?$ ¢
29. \$2 $-$ 47¢ $= ?$
30. \$5.98 + \$4.02 $= ?$
31. $16 \times \$.74 = ?$
32. \$3.42 $\div 9 = ?$
33. 4 gal. $= ?$ qt.
34. $\frac{1}{2}$ da. $= ?$ hr.
35. $\frac{1}{4}$ bu. $= ?$ qt.
36. $\frac{1}{2}$ qt. $= ?$ pt.
37. $1 - \frac{1}{2} = ?$
38. $1 - \frac{1}{4} = ?$
39. $\frac{1}{6}$ of 3 doz. $= ?$
40. Three 9's $= ?$

Pages 304 and 305 provide enrichment material which can be used after this page.

Choosing the Easier Multiplication

Harder Way
3¢ 95 15 27 $2.85
Easier Way
95 3 285

1. Mrs. Lane needed 95 three-cent stamps to mail Christmas cards this year. To find how much the stamps cost, you can multiply 3¢ by 95, that is, you find ninety-five 3's. But multiplying 95 by 3 will give you the same answer, and it is easier to multiply by the smaller number.

See how the multiplication is done both ways. How much did Mrs. Lane have to pay for the stamps?

Ten of these problems use multiplication. When you work them, choose the easier way to multiply.

2. Don counted 87 ears of corn in his garden. If he sells all of his corn at 4 cents an ear, how much money will he get? Use 4×87, the shorter way.

3. Ann paid 5 cents for a bag of peanuts. There were 25 peanuts in the bag. How many peanuts did Ann get for a cent?

4. Peggy's pony eats 2 quarts of oats a day. How many quarts will the pony eat in a year (365 days)?

5. We want to sell 125 tickets for our play at 5 cents each. If we sell them all, how much money will we take in?

6. Sally bought 2 dozen cupcakes for her mother. The cakes cost 6 cents each. How much were they?

7. On a vacation trip, it took us 4 hours to go 184 miles on the train. How many miles an hour did the train go on the average?

8. Jean's mother gives her 5 cents for each errand she runs. How many errands must Jean run to earn 75¢?

9. One week Bob sold 9 dozen eggs. How many eggs did he sell?

10. If Bob got 5 cents for each egg, how much did he get for his 9 dozen eggs?

11. Don picked 60 quarts of strawberries for his father, and was paid 6 cents a quart for his work. How much did he earn?

12. Jim weighs 72 pounds with his overcoat and shoes on. If his overcoat weighs 4 pounds and his shoes weigh 3 pounds, how much does he weigh without overcoat and shoes?

13. There will be 238 people at our school picnic. If we have 4 cookies for each person, how many cookies will we need?

14. Sam's family were taking a trip in their car. Sam's father said they were averaging 42 miles an hour. At this rate, how many miles did they go in 3 hours?

15. Ellen priced jelly beans at the candy store. They were 4 for a cent. How many jelly beans could Ellen buy for 15 cents?

16. Sally paid 75 cents for 3 boxes of raspberries. How much a box was this?

Can You Compare Numbers?

1. During a cold week, Tom kept a record of the outdoor temperatures at 9 a.m. every day. On Monday the thermometer read 16°; on Tuesday, 8°; Wednesday, 0°; Thursday, 24°; Friday, 32°. Which day was coldest? Which day was warmest? On your paper, write the 5 temperatures in order, from the coldest to the warmest.

2. Here are the heights of five basketball players: 5 ft. 8 in., 6 ft. 2 in., 5 ft. 9 in., 6 ft., and 5 ft. 11 in. Write these heights in order, from the tallest to the shortest.

3. Jean kept a record of her savings by months. In six months she saved \$2.08, \$1.70, \$2.10, 95¢, \$1.90, and \$1.50. Write these money numbers in the order of their value, the largest first.

4. Write the following numbers in order, starting with the smallest: 1049, 396, 86, 407, 470.

5. Write these numbers in figures: Two thousand nine hundred, two thousand nine, two thousand ninety, two thousand ninety-nine, two thousand nine hundred nine. Now write them again in order of their value, starting with the smallest.

6. In the first game of ringtoss, Peggy made 5 points. In the second game, she made 20 points. How many times bigger was her second score than her first? $20 \div 5 = ?$

7. Don got 24 cents for some tomatoes and 8 cents for a head of cabbage. How many times as much did he get for the tomatoes as for the cabbage? How much more did he get for tomatoes than the cabbage?

8. Sam and Sue were bobbing for apples. Sam got his apples in 6 seconds. It took Sue 30 seconds to get her apple. How many times as long did it take Sue as Sam? How many seconds longer did it take Sue?

9. 6 is ? times as large as 2.

10. 16 is ? times as large as 2.

11. Peanut bars are 2 for 5¢. How many times as many bars can Ann get for 10¢ as for 5¢? How many peanut bars can she get for 10¢?

12. Bill can get 3 marbles for 5¢. How many times as much must he pay for 6 marbles as for 3 marbles? How much do 6 marbles cost?

13. At 2 for 5¢, how much must Sally pay for 6 buns? How much must Sally pay if she buys 18 buns?

How Many Thousands?

1. Tom delivers newspapers after school. The afternoon paper he delivers says that 137,096 copies of the paper were sold yesterday. Can you read this number? Start, "137 thousand. . . ."

2. There are 807,419 people in Tom's city. How many thousands are there in this number? Tell the value of each figure in this number.

3. Read each of the following numbers. Think of a comma after the thousands in each number.

38428 20251 9160 52000 300000 125246

4. Can you count by 10,000's? Copy and finish this table.

10,000	20,000	?	?	?	60,000	?

5. Can you count by 100,000's? Finish this table.

400,000	?	600,000	?	?	?

Write each of the numbers below in figures.

6. Nine thousand

7. Fifteen thousand

8. Sixty thousand

9. One hundred thousand

10. Two hundred ten thousand

11. Four hundred thousand

12. 450 thousand

13. 75 thousand 420

14. 198 thousand 278

15. 19 thousand 9

16. 200 thousand 69

17. 750 thousand 8

Pages 306 and 307 provide enrichment material which can be used after this page.

Quickies With Fractions

You have already found fractional parts of numbers and measures. This will help you tell what fraction one number is of another. You know that $\frac{1}{4}$ of an hour is 15 minutes, so you can answer the question, "Fifteen minutes are what part of an hour?"

Tell the answers or write them on your paper.

1. Three eggs are what part of a dozen eggs?
2. Six bananas are what part of a dozen bananas?
3. Four inches are what fractional part of a foot?
4. Four is what fractional part of 12?
5. Three is what part of 12?
6. Six is what fraction of 12?
7. $\frac{3}{4}$ of a foot is how many inches?
8. Nine is what fraction of 12?
9. How many ounces are there in $\frac{1}{4}$ of a pound?
10. Eight ounces are what fraction of a pound?
11. Twelve ounces are what fraction of a pound?
12. Four is what fraction of 16?
13. One fourth of a bushel is how many quarts?
14. Sixteen quarts are what fraction of a bushel?
15. Thirty minutes are what part of an hour?
16. One half of a yard is how many inches?
17. Nine inches are what part of a yard?
18. How many hours are there in $\frac{1}{2}$ day?
19. Twelve is what part of 24?
20. Six is what part of 24?

Practicing Addition and Subtraction

These examples will help you brush up your skills in addition and subtraction. Do you remember how to check addition and subtraction?

Copy, add, and check.

	a	*b*	*c*	*d*	e
1.	37 5	98 3	\$ .58 .97	\$3.99 5.04	857 1263
2.	69 67 95	353 478 977	207 669 2173	\$ 8.19 19.48 6.07	\$237.62 90.89 239.30
3.	46 28 97 60	825 609 768 314	756 84 9 365	\$ .68 .54 .06 .98	\$18.40 6.50 52.75 2.48

Copy, subtract, and check.

4.	29 6	35 7	30 8	70 40	85 80
5.	63 29	92 53	153 64	134 68	140 91
6.	691 348	726 159	600 574	803 207	1531 749
7.	\$1.14 .25	\$8.33 5.93	\$14.40 6.55	\$11.32 7.89	\$20.00 12.16

Multiplication and Division Practice

Copy, multiply, and check.

	a	b	c	d	e
1.	34 × 2	20 × 4	51 × 7	80 × 3	16 × 5
2.	48 × 6	75 × 4	507 × 2	\$ .38 × 9	\$1.27 × 8
3.	38 × 10	43 × 30	59 × 80	26 × 21	69 × 36
4.	97 × 59	89 × 47	\$ .84 × 28	\$ .56 × 37	\$ .70 × 67
5.	\$ .35 × 16	\$1.76 × 37	\$2.48 × 25	\$6.20 × 98	\$4.05 × 59

Copy, divide and check. There are final remainders in some of these examples.

	a	b	c	d
6.	$4\overline{)29}$	$2\overline{)94}$	$7\overline{)94}$	$3\overline{)204}$
7.	$6\overline{)408}$	$5\overline{)182}$	$4\overline{)300}$	$9\overline{)351}$
8.	$7\overline{)407}$	$6\overline{)294}$	$5\overline{)404}$	$9\overline{)635}$
9.	$3\overline{)\$7.02}$	$2\overline{)\$7.60}$	$8\overline{)\$3.60}$	$5\overline{)\$4.70}$
10.	$9\overline{)\$16.38}$	$8\overline{)\$56.80}$	$6\overline{)\$5.70}$	$7\overline{)\$27.30}$

Pages 308 and 309 provide enrichment material which can be used after this page.

Two-Step Problems

Here are some more problems with hidden questions. There are two steps in each problem. The first step is to find the hidden question and answer it. The second step is to find the answer to the problem. So, in Problem 1, you first find the answer to the hidden question (How much did the meat cost?). You then find the amount of change Sally got.

1. Sally bought 4 pounds of chopped meat for a meat loaf her mother was going to make. She paid 57 cents a pound for it. She handed the clerk a five-dollar bill. How much change should she get?

2. Sue had 3 dimes. Then her mother paid her a quarter for helping with the housework. How much money did Sue have then?

3. Don bought some garden tools which were sent to him by mail. On the package were four 6-cent stamps and a 10-cent stamp. How much did it cost to mail the package?

4. Jean decided she could not look at television for more than 2 hours this Saturday. She has watched a program for 45 minutes. How many more minutes may she look at television?

5. Tom's father pays him 40 cents an hour for helping him polish the car. This morning, Tom worked from 9 o'clock until noon. How much should his father pay him for this work?

6. Jack is just 5 feet tall. Sylvia is 56 inches tall. How much taller is Jack than Sylvia?

7. Barbara bought a puzzle costing 42 cents. She gave the clerk 2 quarters. How much change should Barbara receive?

8. Don picked 2 bushels of peas from his garden. He sold them at the road stand for 8 cents a quart. How much did he get for the 2 bushels of peas?

9. At the store, Ellen bought 9 oranges costing 6 cents apiece and a box of crackers costing 27 cents. How much money did she spend?

10. Bob and Sam helped Don pick up some early apples under the apple trees. Don said they would share the apples equally. Bob picked up 17 apples, Sam picked up 9 apples, and Don picked up 22. How many apples did each boy receive?

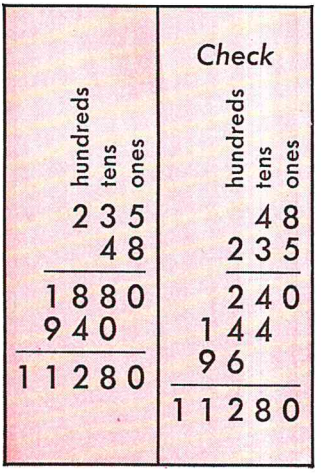
11. Ann wants to buy a doll house costing $7.50. She had saved $4.75. Then she received $2 for her birthday. How much money does she still need?

12. In 3 hours we drove 29 miles, 38 miles, and 47 miles. How many miles an hour had we averaged?

13. Linda bought a game for 59 cents. She handed the clerk a half dollar and a quarter. How much change should he have given her?

14. After Mr. Lane had filled the gasoline tank in his car, he made trips of 49 miles, 61 miles, and 25 miles. He found he had used 9 gallons of gasoline. How many miles to the gallon had he got?

Multiplying by 3-Figure Numbers



1. Don's father has sold 235 bushels of apples. To know about how much he must pay the railroad for hauling them, he has to know how much they weigh. He knows that one bushel of apples weighs 48 pounds. He must multiply 235 by 48. How much do 235 bushels of apples weigh?

To check, multiply 48 by 235. This time there will be *three* partial products, since you multiply by 5 ones, 3 tens, and 2 hundreds. Notice where these partial products are written.

When you multiply by a *two*-place number, you have *two* partial products. When you multiply by a *three*-place number, you have *three* partial products.

Copy these examples, multiply, and check.

	a	*b*	*c*	*d*	*e*
2.	418 75	263 83	695 72	239 49	649 78
3.	923 36	847 48	194 29	463 56	875 69
4.	785 26	237 97	925 58	578 63	658 49

Multiplying Money Numbers

1. Barbara's oldest sister, Lois, sells tickets at a movie theater. Tickets for grownups cost 65 cents each. One day, Lois sold 348 tickets for grownups. To find how much money Lois took in, multiply 348 by 65 (the smaller number). The dollar sign and point must be put in the product. How much did Lois take in?

	Check
348	65
65	348
1740	520
2088	260
22620	195
	22620

2. One Saturday, Sylvia sold 276 children's tickets at 35¢ each. Find how much Sylvia took in for these 276 tickets. Check your work by changing the numbers around and multiplying again. Be sure to write the dollar sign and the point in your answer. How many figures must you always have for cents?

3. The 26 children in Ann's class are going to visit the zoo. The day's trip will cost each child $1.38. Find the total cost and check your answer.

Copy, multiply, and check.

	a	b	c	d	e
4.	$5.70 23	$1.58 68	$3.75 47	$6.42 87	$2.39 26
5.	$3.98 35	$6.40 94	$2.57 39	$6.75 56	$2.78 75

Page 310 provides enrichment material which can be used after this page.

Division With a 3-Figure Quotient

$$\begin{array}{r} \$1.69 \\ 5\overline{)\$8.45} \\ 5 \\ \hline 34 \\ 30 \\ \hline 45 \\ 45 \\ \hline \end{array}$$

1. Bob sold 5 chickens for \$8.45. To find the average price he got for each chicken, divide \$8.45 by 5.

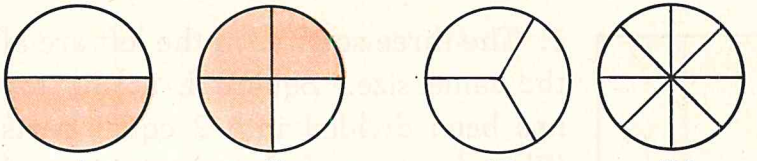
This problem is like other division problems, except that there are three figures in the quotient. Check the answer by multiplying the quotient by the divisor. How much did Bob get per chicken, on the average?

2. Divide 999 by 4. There is a final remainder. Check your answer by multiplying and then adding the remainder to the product.

Copy, divide, and check.

	a	*b*	*c*	*d*
3.	$3\overline{)462}$	$2\overline{)934}$	$4\overline{)624}$	$6\overline{)804}$
4.	$2\overline{)1178}$	$3\overline{)1911}$	$7\overline{)2632}$	$5\overline{)3520}$
5.	$3\overline{)2724}$	$6\overline{)3017}$	$9\overline{)3155}$	$7\overline{)6034}$
6.	$4\overline{)2763}$	$8\overline{)1432}$	$6\overline{)1770}$	$5\overline{)1290}$
7.	$5\overline{)1850}$	$6\overline{)3648}$	$5\overline{)4032}$	$9\overline{)3475}$
8.	$2\overline{)\$7.40}$	$3\overline{)\$8.82}$	$8\overline{)\$9.92}$	$7\overline{)\$9.80}$
9.	$9\overline{)\$13.41}$	$4\overline{)\$29.55}$	$8\overline{)\$29.44}$	$5\overline{)\$46.75}$
10.	$4\overline{)\$9.96}$	$7\overline{)\$36.09}$	$9\overline{)\$19.71}$	$8\overline{)\$47.64}$
11.	$8\overline{)\$56.48}$	$9\overline{)\$56.48}$	$7\overline{)\$35.60}$	$6\overline{)\$29.75}$

What Fractions Make a Whole?



How much have you learned about fractions?

1. What fraction of Circle I is colored? How many halves does it take to make the whole circle?

$$\frac{1}{2} + ? = 1$$

2. What fraction of Circle II is colored? What fraction of the circle is not colored? $\frac{3}{4} + ? = 1$

3. Look at Circle III. $\frac{2}{3} + ? = 1$

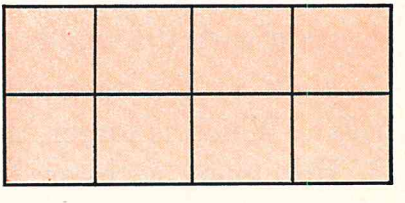
4. Look at Circle IV. $\frac{3}{8} + ? = 1$ $\frac{1}{8} + ? = 1$

5. There are 2 halves in 1 whole. $1 = \frac{2}{2}$. How many 4ths are there in 1 whole? $1 = \frac{?}{4}$

6. How many thirds are there in 1? $1 = \frac{?}{3}$

7. How many eighths are there in 1? $1 = \frac{?}{8}$

Fractions That Mean the Same



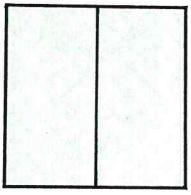
1. This rectangle is divided into eighths. How many eighths does it take to make $\frac{1}{4}$? $\frac{1}{4} = \frac{?}{8}$

2. How many eighths make $\frac{1}{2}$? $\frac{1}{2} = \frac{?}{8}$

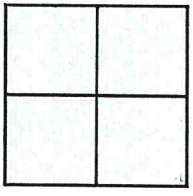
3. How many eighths make $\frac{3}{4}$? $\frac{3}{4} = \frac{?}{8}$

4. How many fourths are there in $\frac{1}{2}$? $\frac{1}{2} = \frac{?}{4}$

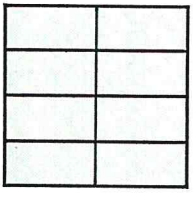
Comparing Fractions



I



II



III

1. The three squares at the left are all the same size. Square I, at the top, has been divided into 2 equal parts. What fraction of the square is each part?

Each part of Square II is what fraction of the square?

Each part of Square III is what fraction of the square?

The squares will help you answer the following questions.

2. Which is more, $\frac{1}{2}$ or $\frac{1}{4}$? $\frac{1}{4}$ or $\frac{1}{8}$? $\frac{3}{4}$ or $\frac{3}{8}$?

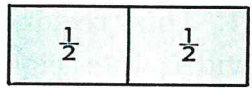
3. Which is less, $\frac{3}{8}$ or $\frac{1}{4}$? $\frac{1}{2}$ or $\frac{5}{8}$? $\frac{3}{4}$ or $\frac{7}{8}$?

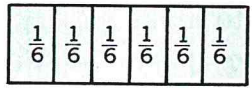
4. Which is most, $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{8}$?

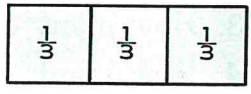
5. Arrange $\frac{1}{8}$, $\frac{1}{2}$, and $\frac{1}{4}$ in the order of their value, starting with the largest.

6. Arrange $\frac{3}{8}$, $\frac{7}{8}$, $\frac{3}{4}$, $\frac{1}{4}$, in order, starting with the smallest.

7. Look at the rectangles at the right. Which is larger, $\frac{1}{6}$ or $\frac{1}{3}$?







8. How many sixths are there in $\frac{1}{3}$?

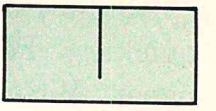
9. How many sixths are there in $\frac{1}{2}$?

10. Is $\frac{1}{3}$ larger or smaller than $\frac{1}{2}$?

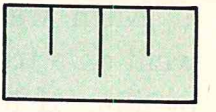
11. How many sixths are there in $\frac{2}{3}$?

Using Fractions of an Inch

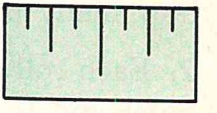
1. At the right are three pictures of an inch. Into what fractions is each inch divided?



2. Which is longer, $\frac{1}{2}$ in. or $\frac{1}{4}$ in.? $\frac{3}{4}$ in. or $\frac{1}{2}$ in.? $\frac{3}{8}$ in. or $\frac{1}{2}$ in.? $\frac{7}{8}$ in. or $\frac{3}{4}$ in.?



3. How many quarter inches are there in a half inch? $\frac{1}{2}$ in. $= \frac{?}{4}$ in. $\frac{1}{4}$ in. $= \frac{?}{8}$ in. $\frac{1}{2}$ in. $= \frac{?}{8}$ in. $\frac{3}{4}$ in. $= \frac{?}{8}$ in.



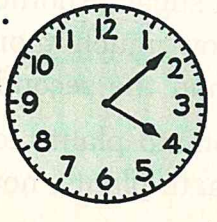
Copy and finish the fractions. Look at the pictures to get the answers.

	a	*b*
4.	$\frac{1}{2}$ in. $+ \frac{1}{4}$ in. $= \frac{?}{4}$ in.	$\frac{3}{4}$ in. $- \frac{1}{2}$ in. $= \frac{?}{4}$ in.
5.	$\frac{3}{4}$ in. $- \frac{1}{4}$ in. $= \frac{?}{2}$ in.	$\frac{1}{4}$ in. $+ \frac{1}{8}$ in. $= \frac{?}{8}$ in.
6.	$\frac{3}{8}$ in. $- \frac{1}{4}$ in. $= \frac{?}{8}$ in.	$\frac{3}{8}$ in. $- \frac{1}{8}$ in. $= \frac{?}{4}$ in.
7.	$\frac{1}{2}$ in. $+ \frac{1}{8}$ in. $= \frac{?}{8}$ in.	$\frac{5}{8}$ in. $- \frac{1}{2}$ in. $= \frac{?}{8}$ in.
8.	$\frac{5}{8}$ in. $- \frac{1}{8}$ in. $= \frac{?}{2}$ in.	$\frac{3}{4}$ in. $+ \frac{1}{8}$ in. $= \frac{?}{8}$ in.

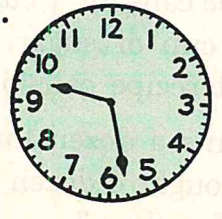
Telling Time

Do you remember how to read a clock? On your paper, write the time each clock tells.

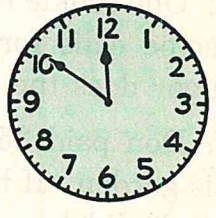
1.



2.



3.



Page 311 provides enrichment material which can be used after this page.

Using Arithmetic

See how many of these problems you can solve as quickies. For the rest, do your work on another paper. Write all the answers on your paper.

1. Allen wanted to take lots of pictures when he went on a trip to the mountains, so he bought 6 rolls of film. If he could take 8 pictures with each roll, how many pictures could Allen take?

2. Each roll of film Allen bought cost 50 cents. How much did he have to pay for all 6 rolls?

3. In one roll of 8 pictures which Allen took, 3 pictures were spoiled. Allen paid 9 cents each for printing the rest of the pictures. How much did he spend?

4. One day, Sue made a pan of peanut cookies. The pan held 6 rows of cookies, with 4 cookies in each row. How many cookies were there in the pan?

5. It takes 12 minutes to bake peanut cookies. If Sue put the cookies into the oven at 3 minutes past 4, when did she have to take them out?

6. One cookie recipe calls for $\frac{3}{4}$ cup of sugar. Another recipe calls for $\frac{1}{4}$ cup of sugar. How much more sugar does the first recipe call for than the second?

7. Don paid 35 cents a dozen for tomato plants for his garden. If he bought 4 dozen tomato plants, how much did he pay for them?

8. Don sold $15.47 worth of tomatoes from his garden. The cost of growing the tomatoes was $3.75. How much money did Don make?

9. Sally is learning to sew. She bought goods for an apron for 49 cents, some braid for 15 cents, a pattern for 10 cents, and thread for 4 cents. How much did the apron cost?

10. Sally bought two cans of soup at 15 cents each, and a box of crackers for 19 cents. How much did she have to pay?

11. Sam rode his bicycle from his house to a friend's house 9 miles away. The trip took 1 hour and 12 minutes. How many minutes, on the average, did it take Sam to go one mile?

12. Nancy practiced her piano lesson 20, 40, 30, 20, and 15 minutes this week. How many minutes a day did Nancy average on these five days?

13. Nancy is supposed to practice half an hour a day. How many minutes less than a half hour did she average these 5 days?

14. Peggy's swimming ticket cost $2.25. It has 9 swims on it. How much is Peggy paying for each swim?

15. Tom has a quarter and 2 dimes. Jerry has 2 quarters. How much more money has Jerry than Tom?

16. Bill's watch says quarter past 4, but his watch is 4 minutes fast. What is the correct time?

Two-Step Quickies

You use two processes to solve each of these quickies. Number your paper 1 to 16. After each number, write the signs to tell what two processes you use in that problem. For Problem 1, write + − to show you add, then subtract. Then write the answers on your paper.

1. Linda bought a popsicle for 5 cents and a pencil for 3 cents. She gave the clerk a dime. How much change did she get?

2. In a game of hide-and-seek, 8 boys and 7 girls hid. After 9 children were caught, how many were still hiding?

3. Bob's Christmas vacation is 2 weeks long. Four days of his vacation have already gone. How many more days of vacation has Bob?

4. Sue made 24 pieces of fudge. She gave 4 pieces to each of 4 friends. How many pieces did she have left?

5. Five boys and 4 girls are planning a picnic. They want to take 3 sandwiches apiece. How many sandwiches must they make?

6. Plums are 3 for 5 cents. Dick wants 6 plums. How much must he pay for them?

7. Mrs. Lane has bought 2 dozen oranges. If the Lanes eat 4 oranges a day, how many days will the oranges last?

8. Allen will be 10 years old on July 2. Dick will be 10 years old on July 23. Which boy is older? How many *weeks* older is he?

9. Jill had 8 jelly beans and Don had 12. If they shared the jelly beans equally, how many did they get apiece?

10. Don sold 3 bunches of radishes for 5 cents a bunch and a head of cabbage for 10 cents. How much did he get in all?

11. Joe is supposed to practice his trumpet an hour a week. He has practiced 10 minutes a day for 4 days. How many minutes must he still practice?

12. Some marbles that Bill wants to buy cost 2 for 5 cents. How much must Bill pay for 6 marbles?

13. Jerry's mother put four 3-cent stamps and a 10-cent stamp on a package. How much did the postage on this package cost?

14. At a bakery, the regular price of apple tarts is 10 cents. Today they are being sold at a special price of 6 for 42 cents. How much cheaper is each tart at the special price?

15. There were 20 boys and 16 girls in our school bus when it left the school. At the first stop, 5 children got out. How many were left in the bus?

16. Sam's baseball team played 4 games this month. They made 7 runs in the first game, 2 runs in the second, 3 runs in the third, and 12 runs in the last game. How many runs did they average per game?

How Well Can You Add?

Copy and add the examples on this page, to help build up your addition skills. Check all your work.

Do you know your addition facts?

	a	b	c	d	e	f	g	h	i
1.	9	6	5	4	7	5	9	3	8
	7	8	7	9	6	4	5	7	9
2.	6	7	9	3	8	2	9	7	4
	4	8	6	9	7	8	9	5	8

Can you add columns?

3.	7	4	4	6	8	9	3	2	6
	7	5	7	4	5	4	9	5	3
	3	6	8	6	3	5	6	9	8
	8	9	1	9	7	7	2	5	5
				6	8	5	3	7	9
							4	9	5

Can you carry?

	a	b	c	d	e
4.	78	470	164	3209	6792
	64	860	430	266	1088
	97	269	56	6724	485
	35	503	227	80	2863

Can you add dollars and cents?

5.	$ .97	$5.63	$15.00	$63.39	$ 63.08
	.40	9.12	78.23	8.67	189.57
	.14	1.50	21.79	37.24	256.87
	.09	6.78	89.39	96.11	9.41

How Well Can You Subtract?

Copy the examples on this page and subtract. These examples will help you strengthen your subtraction skills. Check your work.

Do you remember your subtraction facts?

	a	b	c	d	e	f	g
1.	13	14	12	15	11	16	17
	8	5	9	7	6	9	8

Can you borrow?

	a	b	c	d	e
2.	82	118	134	164	693
	34	56	79	26	547
3.	546	681	835	728	981
	182	152	668	449	863
4.	1493	1228	1627	4747	9436
	775	855	979	2764	3938

Can you use zeros in subtraction?

5.	100	740	1309	5008	3100
	77	344	899	4420	2503

Can you subtract money numbers?

6.	$1.17	$9.70	$15.08	$13.83	$10.25
	.92	5.66	8.12	6.09	6.53
7.	$8.12	$11.90	$56.02	$52.85	$20.00
	7.13	9.88	45.17	23.99	12.39

How Well Can You Multiply?

Copy and multiply. These examples will help you keep up your multiplication skills. Check your work.

Do you know your multiplication facts?

	a	b	c	d	e	f	g	h	i
1.	9	6	7	6	8	6	9	6	7
	7	6	8	9	5	7	9	8	9

Can you carry?

	a	b	c	d	e
2.	14	37	25	93	84
	6	4	7	5	9
3.	139	386	128	329	618
	3	2	8	6	4

Can you use zeros in multiplication?

4.	60	307	405	500	509
	5	7	8	6	2

Can you multiply by 2-figure numbers?

5.	26	42	47	75	93
	10	30	25	13	80
6.	52	84	78	59	68
	59	37	69	84	73

Can you multiply dollars and cents?

7.	\$ .54	\$1.30	\$3.70	\$1.98	\$ .87
	4	9	60	15	48

How Well Can You Divide?

Brush up on your division skills. Copy, divide, and check the examples on this page.

Do you know the division facts?

	a	b	c	d	e
1.	$8\overline{)32}$	$6\overline{)42}$	$5\overline{)45}$	$7\overline{)56}$	$9\overline{)54}$
2.	$7\overline{)63}$	$9\overline{)72}$	$6\overline{)48}$	$8\overline{)64}$	$7\overline{)49}$

Can you bring down numbers in division?

3.	$2\overline{)98}$	$4\overline{)72}$	$3\overline{)84}$	$5\overline{)75}$	$7\overline{)126}$
4.	$6\overline{)216}$	$9\overline{)468}$	$8\overline{)288}$	$7\overline{)175}$	$5\overline{)365}$
5.	$6\overline{)144}$	$8\overline{)152}$	$9\overline{)657}$	$7\overline{)238}$	$9\overline{)126}$

Can you use zeros in division?

6.	$4\overline{)200}$	$8\overline{)560}$	$5\overline{)400}$	$5\overline{)380}$	$6\overline{)204}$

Can you divide with final remainders?

7.	$3\overline{)109}$	$5\overline{)124}$	$7\overline{)563}$	$4\overline{)239}$	$6\overline{)545}$
8.	$8\overline{)221}$	$3\overline{)271}$	$9\overline{)355}$	$6\overline{)113}$	$8\overline{)237}$

Can you divide money numbers?

9.	$3\overline{)\$.54}$	$4\overline{)\$1.00}$	$7\overline{)\$1.89}$	$4\overline{)\$4.10}$	$9\overline{)\$4.25}$
10.	$6\overline{)\$4.32}$	$8\overline{)\$3.91}$	$9\overline{)\$2.34}$	$7\overline{)\$4.09}$	$9\overline{)\$3.45}$

Can you divide with 3-figure quotients?

11.	$2\overline{)490}$	$6\overline{)\$9.60}$	$5\overline{)\$30.95}$	$8\overline{)1640}$	$7\overline{)2035}$

Can You Use the Four Processes?

Diagnostic Check Test 4A

This test will show you how much you have learned this year about the four processes. How well can you add, subtract, multiply, and divide?

Copy and work the examples carefully. Make sure that all your answers are correct.

Find the sums.

	a	b	c	d	e
1.	739 785 956 503	607 89 936 94	3567 7474 9448 3550	\$ 7.28 .96 8.40 13.67	\$58.77 50.70 9.58 43.06

Find the remainders.

2.	901 542	1136 876	1805 1306	\$15.00 8.50	\$30.25 27.49

Find the products.

3.	\$ .74 9	68 31	93 75	\$2.54 20	480 46

Find the quotients.

4.	$9\overline{)162}$	$8\overline{)604}$	$3\overline{)807}$	$6\overline{)\$3.24}$	$4\overline{)\$3.63}$

Do what the signs tell you to do.

	a	b	c	d
5.	$120-32$	80×109	$279+98$	$602\div7$
6.	$75\times3¢$	$\$10-\$6.41$	$\$4.80\div5$	$\$2.78+84¢$

Do You Understand Numbers?

Diagnostic Check Test 4B

This test will show you how much you know about the meaning of numbers.

1. Write the largest 3-figure number you can make with the figures 4, 8, and 3.

2. Write the smallest 4-figure number you can make using the figures 6, 2, 7, and 1.

3. In the number 568, does the figure 8 or the figure 5 have more value?

4. Which month is the fifth month of the year?

5. Which number is larger, 234,000 or 324,000?

6. How many thousands are there in 78,620?

7. Four eggs are what fraction of a dozen eggs?

8. What part of 8 is 4?

9. What number is $\frac{1}{2}$ of 6?

10. Twelve is 4 times as large as what number?

11. Write the number that means 320 thousands, 9 hundreds, 0 tens, 7 ones.

12. Write "six thousand twenty" in figures.

13. Twenty is how many times as large as 4?

14. What number is 16 more than 64?

15. What number is 5 less than 100?

16. Which fraction is largest, $\frac{1}{2}$, $\frac{1}{4}$, or $\frac{1}{8}$?

17. How many eighths must be added to $\frac{3}{8}$ to make 1 whole?

18. How many inches does 4 ft. 6 in. equal?

Can You Use Arithmetic?

Diagnostic Check Test 4C

This test will show you how well you can use arithmetic in problems. Think what process or processes you should use in each problem, then find the answers. You may be able to solve some problems as quickies.

1. Nancy is going to practice her piano lesson for 15 minutes. If she starts at 3:35, when may she stop?

2. Don has pulled 43 beets from his garden. If he ties them in bunches of 8, how many bunches will he have? How many beets will be left over?

3. Bill wants to buy a knife for 85 cents and a flashlight for $1.25. How much money does he need?

4. Sally went to the store to buy a half dozen eggs. The eggs cost 31 cents and Sally had only a quarter. How many more cents did she need?

5. Our car will go 19 miles on a gallon of gasoline. How many miles can we drive with 16 gallons?

6. Sue wants to buy 9 Christmas cards. They are 3 for 10 cents. How much will 9 cards cost?

7. Ellen's mother is going to buy 16 tickets to the movies for the boys and girls who come to Ellen's party. If the tickets are 25 cents each, how much will they all cost?

8. If we drove 117 miles in 3 hours, how many miles an hour did we average?

9. This morning, Ann studied spelling for 5 minutes and worked on her social studies booklet for 30 minutes. How many more minutes did she spend on her booklet than on her spelling? How many times as long did she work on the booklet as on her spelling?

10. The 28 boys and girls in our class are going to make booklets. Each pupil will use 8 sheets of white paper and 2 sheets of colored paper. How many sheets of paper are needed in all?

11. If I buy things costing 27 cents, 42 cents, and 8 cents, how much change will I get from a dollar?

12. Sylvia was selling movie tickets. A man asked for four 65-cent tickets and handed Sylvia a five-dollar bill. How much change should she give him?

13. On four pages of his stamp book, Jerry has 25 stamps, 9 stamps, 14 stamps, and 20 stamps. What is the average number of stamps per page?

14. Don was selling sweet corn for 5 cents an ear. He told a woman customer she could have a dozen ears for 50 cents. How much would she save by buying a dozen ears at a time?

15. Ann is 5 feet tall. Jean is 56 inches tall. Which girl is taller? How much taller?

16. Allen has saved $5.50 toward a camera costing $17.88. His parents told him they would pay half of the cost if Allen would pay the other half. How much more money does Allen still have to save?

Enrichment Material

Pages 258-311 have some interesting arithmetic for those who especially like arithmetic and who have finished their regular work. A note at the bottom of each page in this section tells just when the page is to be used. For example, pages 258 and 259 are to be used after page 19 has been finished.

Using Thousands

You probably use 4-figure numbers every day. Here are some of the ways you use thousands.

Dates. Dates of years are written in thousands. The year 1953 is read "nineteen fifty-three" but it really means one thousand nine hundred fifty-three years after a certain event. Do you know what event this was?

1. What year is this year?

2. What year will next year be?

3. What will be the year ten years from now?

Telephone numbers. Some towns have four-figure telephone numbers. Does yours?

4. Telephone numbers are read in a different way from thousands. Bill says his telephone number is *four five oh three.* The "oh" means zero. Write Bill's number on your paper.

5. Ann's telephone number is three eight hundred. Write it. Use two zeros at the end.

Pages 258 and 259 are to be used after page 19.

6. Read 2510 as a telephone number. Read "oh" for the zero.

7. Write "seven two hundred" and "one oh five one" as telephone numbers.

House numbers. Large towns and cities may have house numbers that go into the thousands.

8. Tom lives at twenty-eight seventy-two Maple Street. Write his street address.

9. The house beside Tom's is number 2874. Read it. Number 2873 is across the street. Read it.

10. In a city, the houses with *even* numbers are usually on one side of the street and the houses with *odd* numbers on the other. Does Tom live on the even or odd side of his street?

Automobile licenses. Some states have car licenses that go into the thousands. Does yours?

11. Mr. Lane has two cars. One license is five four nine seven. The other is five four nine eight. Write both numbers. Tell what you notice about them.

12. Last year Mr. Lane had only one car. Its license number was 7842. Read it.

Other ways you use thousands. See if you can find the answers to these questions.

13. Do more or less than 1000 people live in your town?

14. Do more or less than 1000 children go to school in your town?

Pages 258 and 259 are to be used after page 19.

Can You Be the Clerk?

Can you count money and make change?

1. Suppose a customer bought some meat costing 68 cents and gave you 2 pennies, a dime, and a quarter to pay for it. How much money did he give you? Was it the right amount? What should you do about it?

For each of the purchases below, the customer thinks he is giving you the right amount. He gives you the coins shown. Find out whether he gave you the right amount. On your paper write "Right" if the amount is correct. If the amount is wrong, write the correct amount.

	Purchase Price	The customer gives you				
		Half dollar	Quarters	Dimes	Nickels	Pennies
2.	54¢		1	1	1	4
3.	87¢	1		3	1	2
4.	72¢		2	3		2
5.	65¢	1		1	1	
6.	83¢		3	1		3
7.	96¢		3	1	3	1
8.	79¢			6	4	4
9.	91¢		1	3	6	6
10.	42¢			2	1	17

Pages 260 and 261 are to be used after page 31.

11. Suppose Mrs. Blake asked you to change a half dollar for her so that she could have a nickel to put in the parking meter. What coins could you give her in change?

12. Suppose a customer made a purchase of 31 cents and handed you a dollar. In change, you gave her 4 pennies, 2 nickels, 3 dimes, and 1 quarter. How much change did you give her? Could you have made the change with a smaller number of coins?

Customers make the following purchases, and each one gives you a dollar bill. The coins you give in change are shown in the table. On your paper, write the total change you gave each time. Was it the right amount?

	Purchase Price	Coins you could give in change for $1.00				
		Pennies	Nickels	Dimes	Quarters	Half dollar
13.	45¢		1			1
14.	39¢	1	2		2	
15.	17¢	2	4	1		1
16.	68¢	2	1		1	
17.	26¢	4		3		1
18.	72¢	3	3	1		
19.	53¢	2	4		1	
20.	89¢	1	3			
21.	9¢	1		2	3	

Pages 260 and 261 are to be used after page 31.

Can You Finish Problems?

In each of these problems, you have three things to do. (a) On your paper, write sensible numbers for the missing numbers. (b) Write a question to finish the problem. (c) Find and write the answer to your problem. You will have to decide whether your problem is an addition or subtraction problem.

1. I bought an ice cream cone for ? cents. I handed the clerk ? cents.

2. Sue baked ? muffins for breakfast. The family ate ? of the muffins.

3. For lunch at school today, Tom bought some baked beans for ? cents, some soup for ? cents, and some fruit for dessert for ? cents.

4. Bill has ? pictures of baseball players. Tom has ? pictures of baseball players.

5. Bill wants a toy airplane that costs ? cents. He has ? cents in his pocket.

6. Jerry has ? stamps in his big stamp book. He has ? stamps in his trading stamp book.

7. Jill wants to buy a package of flower seeds that costs ? cents. She has only ? cents.

8. Sue earned ? cents for helping her mother clean the living room and ? cents for doing the dishes.

9. Nancy practiced her piano lesson ? minutes on Friday and ? minutes on Saturday.

Pages 262 and 263 are to be used after page 33.

Can You Make Up Problems?

See if you can make up addition and subtraction problems for the others to solve. Be sure you can work your problems yourself!

Always be sure whether the problem is an addition or a subtraction problem.

1. Make up a problem about how many inches tall you are and how tall one of your friends is.

2. Make a problem about buying a puzzle and a game at the store.

3. Make a problem about some toy you want to buy and how much money you have saved to buy it with.

4. Make a problem about how many stamps two boys have in their stamp collections.

5. Make a problem about how many pounds you think you weighed a year ago and how many pounds you weigh today.

6. Make a problem about how many sandwiches you took to a picnic and how many sandwiches there were left after the picnic was over.

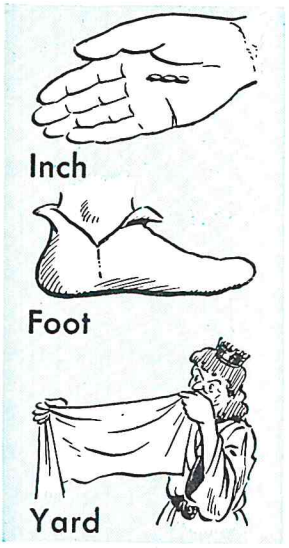
7. Make a problem about how much money you earned for doing two different things.

8. Make a problem about buying a lunch at the school cafeteria or at a restaurant.

9. Make a problem about getting change when you buy something in a store.

Pages 262 and 263 are to be used after page 33.

Learning About Measures of Length



Where did our measures of feet, yards, and inches come from? Once they were probably all measures based on lengths of the body.

A **foot**, of course, was the length of a man's foot. In very early times, people must have been big, because the foot was more than 12 inches long! Our foot of 12 inches was invented in England. It is used only in countries where people speak English.

The **inch** used to be the width of a man's thumb. Then an English king decided that thumbs were too many different sizes. So he said an inch was equal in length to three grains of barley placed end to end.

The length of a **yard** is said to have been settled by another English king. He said it was the distance between his nose and the thumb of his outstretched arm. Sometimes you still see people measure yards of cloth this way.

In time, these measures were all made to fit together. A foot was made exactly 12 inches, and a yard exactly 3 feet.

Pages 264 and 265 are to be used after page 43.

1. Measure your own foot to the nearest inch. How long would a yard based on one of your feet be?

2. Use a piece of string to measure from the tip of your nose to the tip of your thumb, with your arm out wide. How many inches less than a yard is it?

3. Dick wants to cut three pieces from the same board. One piece will be 12 inches long, another piece 14 inches long, and the third 18 inches long. How long a board must Dick have? How many inches longer than a yard must Dick's board be?

4. Sally is making a Halloween costume. Her directions call for a yard of black cloth. She found at home a piece 24 inches long. How much more black cloth does she need?

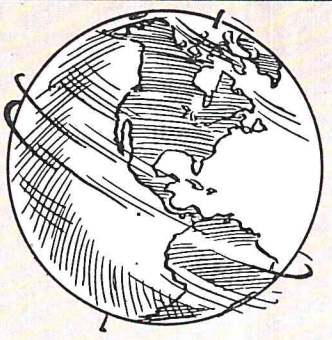
5. Bill's bedroom rug is 1 yard and 2 feet wide. How many feet wide is it?

6. Another measure from early times is the **hand.** It is the width of the hand, or 4 inches. Horses' heights are measured in hands. Measure the width of your hand. Is it more or less than 4 inches?

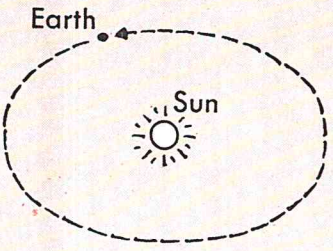
7. The **fathom** is a measure of length used by sailors to measure the depth of water. A fathom is 6 feet long. The fathom is said to have started as the length of a man's outstretched arms. Have someone measure the distance between the fingertips of your outstretched arms. Is your "fathom" more or less than 6 feet?

Pages 264 and 265 are to be used after page 43.

Learning About Time



A day is one spin of the earth.



A year is one trip of the earth around the sun.

Where did our measures of time come from? Two of them, the day and the year, are measured by the sun.

As you know, the earth moves in two different ways. It spins around and around like a spinning ball. It also moves around the sun, in a big path that is almost a circle.

When the earth spins around once, that is a **day** (we think of it as a day and a night). When the earth makes one complete trip around the sun, we call it a **year**. A year is about one fourth of a day more than 365 days.

A day, or one spin of the earth, got divided into 24 hours for convenience. It could have been divided into 20 or 30 parts just as well. But the people who started dividing it into 24 parts liked to count by 12's.

Pages 266 and 267 are to be used after page 50.

Minutes and **seconds** were invented by the Babylonians. They lived even before the Romans did. The Babylonians were fond of dividing things into 60 parts. So there are 60 minutes in an hour, and 60 seconds in a minute.

1. Tom's town has parking meters. You can put in two nickels for 2 hours, or one nickel for 1 hour. One penny will give you 12 minutes of parking time.

If I put in a nickel and a penny, how many minutes can I have?

2. Tom's family put in a nickel. When they came back, 21 minutes were left on their parking meter. How many minutes had they been gone?

3. At 3 o'clock another day they put 2 pennies in the meter. When should they be back?

4. Tom took a long train trip last summer. He was on the train 31 hours. How much more than a-day-and-a-night was this?

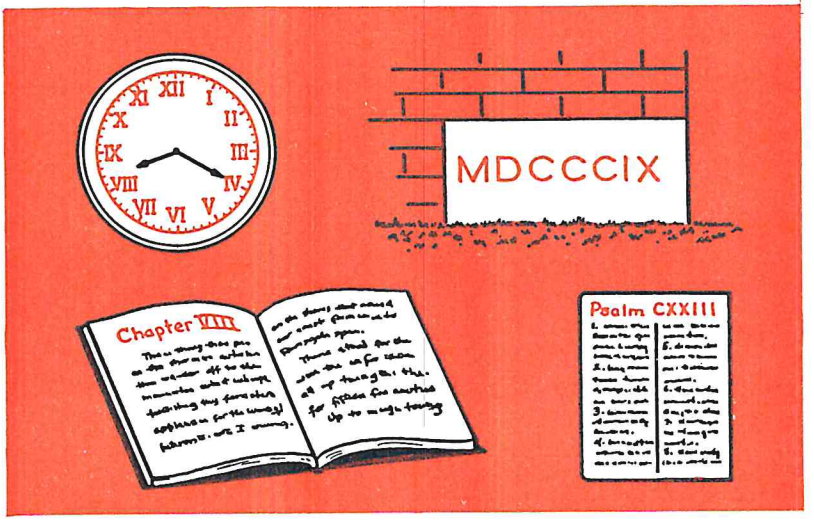
5. If the train on which Tom was riding went a mile a minute, how many miles did it go in 15 minutes? How many miles would it go in half an hour at this rate? How many miles an hour was it going?

6. Tom's father went by train from Chicago to California in 72 hours. By subtraction, find how many 24-hour days this was.

7. Tom spends 6 hours a day in school. He sleeps 10 hours at night. How many hours a day does this leave Tom for all the other things he wants to do?

Pages 266 and 267 are to be used after page 50.

Larger Roman Numbers



The Romans lived about 2,000 years ago. They did not use the same figures in arithmetic that we do. Instead, they wrote all their numbers with 7 capital letters: I, V, X, L, C, D, and M.

You already know that I is 1, V is 5, X is 10, and L is 50. C stands for 100, D stands for 500, and M stands for 1,000.

Nobody knows exactly why the Romans wrote their numbers this way. We still use Roman numbers, however. Sometimes our clocks have Roman numbers on them. Sometimes we find a date written in Roman numbers. Chapters in books are often numbered this way. So are the Psalms in the Bible.

Pages 268 and 269 are to be used after page 53.

You have learned how the Romans made numbers up to 40. Larger Roman numbers are made according to the same rules.

1. If a letter of smaller value comes *after* a letter of larger value, you *add*. LII means 50 + 2, or 52. What does LX mean?

2. If a letter of smaller value comes *before* a letter of larger value, you *subtract*. In XC you subtract 10 from 100. What number does XC mean? What does XCIII mean?

3. CIX means 109. Since XLVII means 47, what does CXLVII mean? What does CXVI mean?

4. Tell why LXXIX means 79. What does LXXXVI mean?

5. What psalm is the next after Psalm XCV? What psalm follows CIX?

6. What psalm comes just before Psalm L? What psalm comes just before Psalm CV?

7. Which psalm comes earlier, Psalm LXXXI or Psalm XLVIII? CII or XCIX?

On your paper, write our number for each of these Roman numbers.

	a	*b*	*c*	*d*	*e*	*f*
8.	LVIII	LXII	XLV	XLIX	LXXIV	LXVII
9.	LXXXV	XCVI	CXXIII	XCIV	CXL	CCC

Write these numbers as the Romans wrote them.

10.	41	48	54	63	60	76
11.	94	99	103	125	142	169

Pages 268 and 269 are to be used after page 53.

More About Time

People who liked counting by 12's divided the year into 12 months. They said there were 12 full moons in a year. From one full moon to the next is about 29 days.

The trouble was that these months did not come out exactly even with the year. Some days were left over. That is why our months are of different lengths. The extra days had to be put in somewhere.

We have leap years because the earth takes a little more than 365 days to go around the sun. About every four years, this time adds up to an extra day. Which month gets the extra day?

Some people want to divide the year into 13 months of 28 days each. How many weeks are 28 days? Thirteen 4's are 52. There are 52 weeks in a year with one day over.

The 13-month plan would make all the months the same length. The extra day would have to be put in somewhere. And we would still need leap years.

Do you think 13 months of 28 days each would be easier to use than the unequal 12 months we now have? Why?

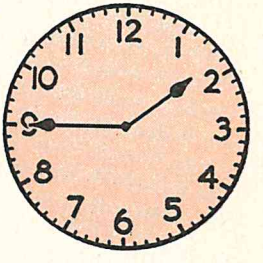
Why do you think people haven't decided to use the 13-month calendar? Do you think they ever will change our calendar?

Pages 270 and 271 are to be used after page 71.

1. Leap years come every 4 years. 1960 is a leap year. Is 1964 a leap year? How can you tell? Is 1970 a leap year? Is 1976?

2. Jerry's birthday was on June 1. On March 1, his family promised him a big new stamp album for his birthday. How many days did Jerry have to wait? Maybe the calendar on page 48 will help you find out.

3. The minute hand on this clock has gone three fourths ($\frac{3}{4}$) of the way around the clock. How many minutes are there in three quarters of an hour?



4. Bill says he can walk a mile in 15 minutes. What fraction of an hour is 15 minutes? At this rate, how far can Bill walk in half an hour? How far can he walk in three quarters of an hour?

5. Sue's new wrist watch has a second hand. Sue wants to measure half a minute. How many seconds equal half a minute? What fraction of a minute is 15 seconds? What fraction of a minute is 45 seconds?

6. Sue's cousin can run a race in 20 seconds. What part of a minute is this?

7. One reason people have liked to count things by 12's is that 12 is an easy number to divide. What numbers do you know that will go exactly into 12? There are four of them, not counting 1 and 12.

What numbers will go exactly into 10?

Pages 270 and 271 are to be used after page 71.

Do You Multiply or Divide?

Number your paper 1 to 13. Read each problem to find whether you should multiply or divide, and write M or D after the number of the problem. Write the answer after the letter.

1. Suppose you know that half a dozen cupcakes cost 30 cents. Do you multiply or divide to find how much a dozen cupcakes would cost? How much would a dozen cost?

2. You know that half a dozen doughnuts cost 36 cents. Do you multiply or divide to find the cost of one doughnut? How much does one doughnut cost?

3. Four boys gave $1.50 apiece to buy a football. Do you multiply or divide to find how much they can spend for the football? How much can they spend?

4. One hundred twenty-eight pupils from our school are going on a trip. Four buses will take them. Do you multiply or divide to find how many pupils should go in each bus? How many children should each bus carry?

5. Each bus can carry 40 children. Do you multiply or divide to find how many children 4 buses can carry? How many children can 4 buses carry?

6. The thirty-five pupils of our class are going on a picnic. We want to have 3 sandwiches apiece. Do we multiply or divide to find how many sandwiches to make? How many sandwiches must we make?

Pages 272 and 273 are to be used after page 83.

7. On the picnic, we want to take one pumpkin pie for each 5 children. Do we multiply or divide to find how many pies we need for 35 children? How many pies do we need?

8. Every Saturday, you earn 40¢ by helping your father wash the family car. Do you multiply or divide to find how much you will earn in 5 Saturdays? How much will you earn?

9. If a pound of fudge costs 82 cents, do you multiply or divide to find how much half a pound should cost? How much should half a pound of the fudge cost?

10. Sally is looking at some goods that costs 79¢ a yard. Should she multiply or divide to find how much 3 yards would cost? How much will 3 yards cost?

11. Ellen and Jean gave a party. The things for the party cost $2.84. Should the girls multiply or divide to find how much each one should pay? How much should each girl pay?

12. You know that for an entertainment, your schoolroom can hold 5 rows of chairs with 12 chairs in a row. Should you multiply or divide to find how many chairs the room can hold? How many people can have chairs for an entertainment in your room?

13. You have 55 chairs to put in 5 equal rows. Should you multiply or divide to find how many chairs to put in each row? How many chairs do you put in each row?

Pages 272 and 273 are to be used after page 83.

Choosing the Right Process

Here are some problems without any numbers, so you do not have to find any number answers. Number your paper 1 to 13. Read each problem and decide which process you would have to use to work it if it had numbers. Then write **add, subtract, multiply,** or **divide** on your paper after the number of the problem.

1. You know how much a baseball bat costs and how much a baseball glove costs. Would you add, subtract, multiply, or divide to find out what both of them would cost?

2. You know how many sandwiches there are for a picnic and how many people are going to come on the picnic. What would you do to find how many sandwiches each person may have?

3. You know how many pages there are in a book, and how many pages you have read in the book. How do you find how many pages you still have to read?

4. You buy something in a store. To find whether you got the right change, what do you do?

5. You know how many tables there are in a school cafeteria, all with the same number of seats. You know how many children can sit at each table. How can you find how many children can eat in the cafeteria at one time?

Pages 274 and 275 are to be used after page 87.

6. You know how much some skates cost. You know how much a bicycle costs. What would you do to find how much more the bicycle costs than the skates?

7. You know how many fish Sam caught and how many fish Bob caught. How do you find how many fish both boys caught?

8. You know how many pies there are for lunch in the school cafeteria. You know how many pieces each pie will be cut into. How will you find how many children can be served with pie?

9. You know how much money there was in your pocket yesterday. You know how much you have in your pocket today. How can you find how much you must have spent?

10. You know how many miles you went on a trip, and how many gallons of gasoline you used on the trip. How do you find how many miles you went on one gallon of gasoline?

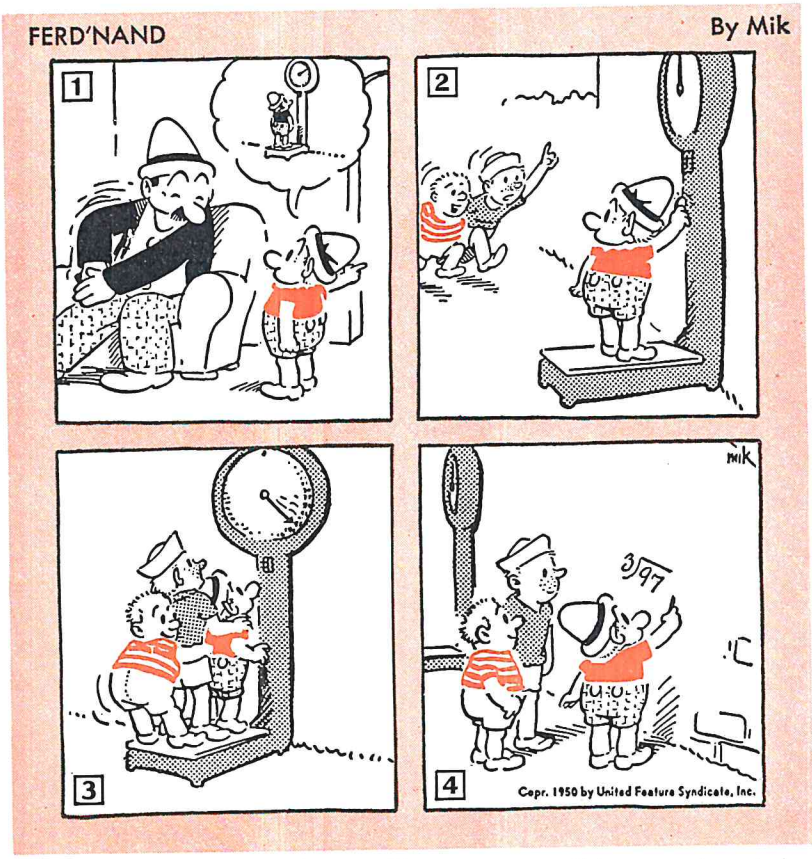
11. You have some money in your bank, then you get some money for your birthday. How do you find how much money you have then?

12. You know how much one yard of dress goods costs and how many yards will be needed for a dress. How do you find how much the goods will cost?

13. You know how many rows of chairs there are and how many chairs in each row. How do you find the total number of chairs?

Pages 274 and 275 are to be used after page 87.

Using Averages



You will have fun talking over this comic strip. You may want to discuss some of these questions.

Why does the little boy want the penny? Why do his two pals tell him to wait? What weight do the scales show in the third picture? What is the boy doing in the fourth picture? Why isn't this a good way to use an average?

Pages 276 and 277 are to be used after page 97.

The average is an idea you can use almost every day. The problems about averages on this page will suggest some ways in which averages may be used. Find the answer to each problem and discuss how the average you found might be used.

1. Suppose you know that your father can drive about 95 miles on 5 gallons of gasoline. About how many miles does he average for each gallon of gasoline? How might your father use this information in planning a trip in his car?

2. When your father has driven 6 hours on a trip, he finds that he has gone 240 miles. How many miles an hour has he averaged? How might he use this average in thinking about the rest of his trip?

3. You make a bicycle trip of 18 miles in 3 hours. How many miles an hour have you averaged? How can you use this average speed to find how many hours you should allow for a trip of 24 miles? How can you use it to find how many miles you can plan to go in 2 hours?

4. Your music teacher wants you to practice 4 hours a week. How many minutes is this? If you practice 6 days a week, how many minutes a day should you try to average?

5. On Monday, Tuesday, and Wednesday, you have spent $1.20 in all for lunches. How much a day did you spend, on an average? How can you use this average?

Pages 276 and 277 are to be used after page 97.

Making Up Your Own Problems

In each problem, think of sensible numbers to use where the numbers are missing. Then make up a question to finish the problem and make it a *multiplication* problem or a *division* problem. Write your numbers and your questions on your paper and find the answers.

You may want to read some of your problems to the rest of the class. They will tell you whether to multiply or divide in each problem. If your numbers are small enough, they may be able to tell you the answers.

1. Tom and his friends bought ? candy bars at the store. The bars cost ? cents apiece.

2. Allen paid ? cents to have ? pictures printed at the store.

3. ? of us went on a picnic. We had ? cookies in all.

4. Sue made a pan of fudge. She cut it into ? rows with ? pieces in each row.

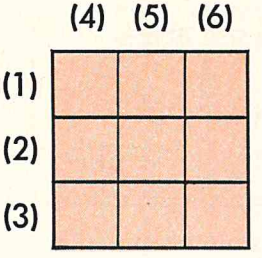
5. Bill's mother gives him ? cents every time he goes to the store for her on his bicycle. Last week, Bill made ? trips to the store for his mother.

6. In a store, Jean saw some valentines that cost ? cents apiece. She had ? cents in her pocketbook.

7. ? pupils in our class are going on a trip to the zoo. One automobile can carry ? of us.

Pages 278 and 279 are to be used after page 105.

Cross-Number Puzzles



1. On your paper, make a square like the square at the left. Find the sum of 298 and 376, and write it in the top *row* of your square, (1) *across*. Find the sum of 747 and 89 and write it in the next row, (2) across. Find the sum of 76 and 54 and write it as (3) across.

Now find the sum of 585 and 96. Is it the same as the figures you have written in the first *column,* (4) *down?* Find the sum of 625 and 108. Is it the same as (5) down? Find the sum of 62 and 398. Does it check with (6) down?

2. On your paper, make another square like the one above. Find all the answers to these examples before you fill in the square.

Across: (1) 439 + 406 (2) 91 + 297 (3) 28 + 129

Down: (4) 465 + 366 (5) 308 + 177 (6) 358 + 229

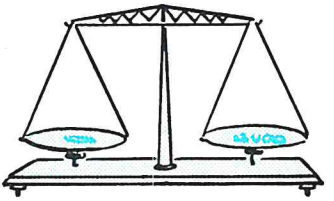
3. Use these subtraction examples for another square.
(1) 1000 − 725 (2) 1308 − 928 (3) 830 − 623
(4) 911 − 679 (5) 1460 − 680 (6) 1250 − 743

4. Use these examples for your fourth puzzle square.
(1) 1080 − 488 (2) 1020 − 203 (3) 1510 − 564
(4) 860 − 271 (5) 1611 − 697 (6) 1121 − 845

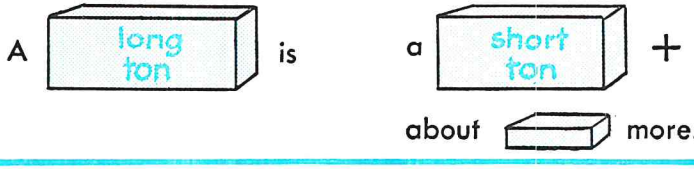
Pages 278 and 279 are to be used after page 105.

Measuring Weight

A grain of wheat is the basic unit of weight in the world.



Precious metals are still weighed by 12-ounce (troy) pounds.



If you had 7,000 grains of wheat, you would know just how heavy a pound is! Thousands of years ago, men found that grains of wheat were of about the same heaviness. Our whole English system of measuring weight is based on the weight of a grain of wheat.

There used to be 480 **grains**, as they were called, in an **ounce**, and 12 ounces in a **pound**. Jewelers and other people who weigh gold and silver still use a 12-ounce pound.

But for buying and selling most things, we use a pound with 16 ounces in it. This heavier pound was established by an English king 650 years ago.

Pages 280 and 281 are to be used after page 113.

Heavy things are weighed in **tons.** What things can you name that are measured in tons?

Here in the United States, we generally use the **short ton** of 2,000 pounds. In England, people generally use the **long ton,** or 2,240 pounds.

1. If you worked in a grocery store, how many 5-pound boxes of sugar would you have to pile up to get a short ton of sugar?

2. Tom's father bought 6,438 pounds of coal yesterday. How much more than 3 (short) tons of coal did Tom's father buy?

3. How many pounds do three long tons of coal weigh?

4. How many pounds heavier than 3 short tons are 3 long tons of coal?

5. One of Sue's cake recipes take four ounces of butter. What part of a pound of butter will Sue use when she makes this kind of cake?

6. What numbers besides 1 and 16 will divide 16 exactly? What fraction of a pound is 2 ounces? 4 ounces? 8 ounces?

7. Which of these fractions is an exact number of ounces? $\frac{1}{2}$ lb. $\frac{1}{3}$ lb. $\frac{1}{4}$ lb. $\frac{1}{5}$ lb. $\frac{1}{6}$ lb.

8. Which is more, $\frac{1}{2}$ pound or 5 ounces?

9. Which is more, $\frac{1}{4}$ lb. or 5 ounces?

10. Which is more, $\frac{1}{2}$ lb. or $\frac{1}{4}$ lb.?

11. 100 pounds is called a hundredweight. How much less than a hundredweight do you weigh?

Pages 280 and 281 are to be used after page 113.

Making Up the Second Question

In each of these problems, one question is asked. Can you make up a second question which uses the answer to the first question? Find the answer to your second question.

1. Sue took $5.00 to the store. She bought a cake pan for 98 cents and a mixing bowl for $1.25. How much did the cake pan and mixing bowl cost together?

2. Dave bought three pairs of socks for 49 cents a pair and a sweater for $3.68. How much did the three pairs of socks cost?

3. On a fishing trip, Sam, Bob, and Don agreed to share equally any fish that they caught. Sam caught 14 fish, Bob caught 7 fish, and Don caught 3 fish. How many fish did the boys catch together?

4. Jean sent away for a dozen narcissus bulbs at 9 cents a bulb. Ann said she would buy half the bulbs from Jean. How much did the dozen narcissus bulbs cost Jean?

5. The Lanes took a three-day automobile trip of 750 miles. The first day they drove 254 miles and the second day they drove 290 miles. How many miles did the Lanes drive on the first two days?

6. Sally bought 5 grapefruit costing 8 cents apiece. She handed the clerk a half dollar. How much did the 5 grapefruit cost in all?

This page is to be used after page 125.

Can You Work Old Problems?

Here are some problems from an arithmetic book written a hundred years ago. Can you find the answers which the boys and girls had to find then?

1. Effie took 792 steps in going to school and Emma took 678 steps. How many more steps did Effie take than Emma?

2. Eddie's kite arose 489 feet and Willie's kite rose 46 feet higher. How high did Willie's kite fly?

3. Maggie's doll cost 95 cents and a little cradle for it cost 245 cents. How much did both cost?

4. A farmer has 1276 sheep and 759 lambs. How many more sheep has he than lambs?

5. Fanny solved four hundred and twelve problems, and Charlie solved five hundred and six problems. How many more did Charlie solve than Fanny?

6. What are nine loads of hay worth, at the rate of 23 dollars a load?

7. At 5 dollars each, how many sheep can you buy for 550 dollars?

8. Edward learned to spell seventy-three words one week and eighty-six words the next week. How many words did he learn to spell in both weeks?

9. Minnie's mother bought her an arithmetic and slate for 130 cents. If the slate cost 48 cents, what did the arithmetic cost?

This page is to be used after page 133.

Using Fractions of Measures

Everybody needs to use parts of measures every day. See if you understand fractions of measures well enough to work these problems as quickies.

1. Ann is making a doll dress. She needs a quarter of a yard of material. How many inches of material does she need?

2. Jim ran a race in 10 seconds. Is this $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{6}$ of a minute?

3. If Jim gets 40 cents an hour for helping to wash the car, how much should he get for working 30 minutes?

4. Jim's father says he can walk a mile in a quarter of an hour. How many miles an hour can he walk at this rate? This picture may help you solve this problem.

5. Bob's mother said, "Sell me $\frac{1}{6}$ of a dozen eggs, Bob." How many eggs did she want to buy? If eggs were 54 cents a dozen, how much did she pay Bob for them?

6. Sue needs $\frac{3}{4}$ of a pound of sugar to make some candy. How many ounces of sugar should she measure out on the scales?

Pages 284 and 285 are to be used after page 143.

7. Sally wants to measure half a yard of ribbon. How many inches equal a half yard?

8. Sally said she would stay with Mrs. Bell's baby one morning while Mrs. Bell did an errand. Sally stayed from 10:10 to 10:20. How many minutes was this? Was it $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{6}$ of an hour? If Sally gets 30 cents an hour for staying with the baby, how much should she get this time?

9. Once Sally stayed with the baby for 40 minutes. At 30 cents an hour, how much was she paid?

10. Dick wants to make a shelf half a foot wide. How many inches wide will it be? If he makes another shelf $\frac{3}{4}$ of a foot wide, how many inches wide will the second shelf be?

11. For her art work, Jean bought 8 colored pencils. Was this $\frac{2}{3}$ or $\frac{3}{4}$ of a dozen pencils?

12. Bob had a dozen eggs to sell.

a. He sold $\frac{1}{4}$ dozen to Mrs. Black. How many eggs was this?

b. He sold $\frac{1}{2}$ dozen to Mrs. Rich. How many eggs was this?

c. How many eggs did he sell to both Mrs. Black and Mrs. Rich? What fraction of a dozen was that?

d. What fraction of a dozen eggs did he have left?

13. Ellen bought a candy bar that weighed 2 ounces. How many of these bars does it take to make a pound? What fraction of a pound is each 2-ounce bar?

Pages 284 and 285 are to be used after page 143.

Finding the Cost of Lunches

Here are the prices of some foods in this school lunchroom. Use them for the problems on the next page.

Meat pie	12¢	Salad	8¢
Irish stew	10¢	Bun	2¢
Salmon loaf	13¢	Butter (portion)	1¢
Baked beans	8¢	Orange	4¢
Baked potato	6¢	Apple	5¢
Corn	4¢	Cake	7¢
Peas	4¢	Ice cream	6¢
Sandwich	7¢	Milk	6¢

Pages 286 and 287 are to be used after page 153.

Look at the price list on page 286. Which of the foods listed are main dishes? Which are vegetables? Which are fruits? Which are desserts?

Suppose you were the cashier of this lunchroom. Use the prices listed to find the cost of the following lunches.

1. Meat pie, peas, salad, apple, ice cream, milk.
2. Irish stew, bun, butter, orange, cake, milk.
3. Baked beans, sandwich, salad, ice cream, milk.
4. Salmon loaf, peas, apple, baked potato, milk.
5. Baked potato, butter, salad, cake, ice cream.
6. Irish stew, two buns, butter, salad, milk.
7. Meat pie, baked potato, butter, corn, milk.
8. Baked potato, butter, peas, cake, apple, milk.
9. Sandwich, baked beans, corn, apple, cake, milk.
10. Salmon loaf, corn, peas, bun, butter, milk.
11. Salad, sandwich, orange, cake, ice cream, milk.
12. Baked potato, butter, peas, orange, cake, milk.
13. Meat pie, salad, 2 buns, butter, orange, milk.
14. Baked beans, bun, butter, salad, cake, milk.
15. Baked potato, butter, ice cream, apple, milk.
16. Which lunch cost more, the lunch in Problem 5 or the lunch in Problem 6? How much more did it cost?
17. Which of these 15 lunches would you like best for yourself? Why?
18. From the list on page 286, pick out a lunch you would like to have and find how much it would cost.

Pages 286 and 287 are to be used after page 153.

Remainders in Everyday Life

Division problems are more likely to "come out even" in arithmetic books than they are in everyday life. These problems show some of the ways division is used every day. See if you can do all these problems as quickies.

1. There are 4 of us for lunch. We have 9 cookies. How many cookies can each person have as his share? How many of us can have an extra cookie?

2. Tom, Jerry, and Bill spent a quarter for some doughnuts. If they divide the cost equally, what must each one pay? How much extra to pay will there be?

3. Sally wants to cut 18 inches of ribbon into four-inch pieces. How many pieces can she get? How many inches of ribbon will be left over?

4. There are 11 oranges in the refrigerator, and 3 people in our family. If we each have an orange a day, how many days will the oranges last? How many oranges will be left at the end of this time?

5. Jean has 44 cents. How many 5-cent pencils can she buy? How much will she have left?

6. Allen has a small album for his snapshots. He can get 5 pictures on a page. How many full pages will 32 pictures take? How many pictures will be left over for another page?

Pages 288 and 289 are to be used after page 161.

7. Jean and Tony take turns helping with the dishes. If there are 3 meals a day 7 days a week, how many times a week must each one help? How many extra times must one of them help?

8. Sam wants to buy some 4-cent fish hooks. With 35 cents in his pocket, how many can he buy? How much will he have left?

9. This morning Don pulled 38 beets from his garden. If he ties them in bunches to sell, 4 beets in a bunch, how many bunches will he have? How many beets will be left over?

10. Sally and Jean are making some fancy crepe-paper costumes for a play. It takes 4 yards to make one costume, and the girls have 30 yards. How many costumes can they make? How many yards of crepe-paper will be left over?

11. Jean collects picture post cards. She wants to mount 27 of her favorite cards in rows on a sheet of cardboard for the hobby show at school. She can get 6 cards in each row. How many rows will the 27 cards make? How many cards will be left over?

12. Last summer, Don helped sell fruit at his father's road stand. One day, he counted the money they had. There were 33 quarters. Don put them in piles with 4 in each pile. How many piles were there? How many quarters were left over? Do you know how many dollars and cents the quarters were worth?

Pages 288 and 289 are to be used after page 161.

Using Maps

On page 291 is a map of Morton County, the county in which Sam's family lives.

1. With a ruler, measure the *length* of the county to the nearest inch. It is a little more than 6 inches long.

The **scale** of the map is 24 miles to the inch. That means that each inch on the map stands for 24 miles. So, to find about how many miles long the county really is, multiply 6×24. About how many miles long is Morton County?

2. Measure the *width* of the county to the nearest inch. About how many miles wide is the county?

3. Measure the distance from Armville to Boonton, to the nearest inch. About how many miles is it from Armville to Boonton?

4. Measure the distance from Boonton to Carter, to the nearest inch. About how many miles apart are Boonton and Carter?

5. In the same way, find how many miles it is from Carter to Dayton.

6. On the map, Sam's home is about $\frac{1}{2}$ inch from Carter. About how many miles from Carter does Sam live?

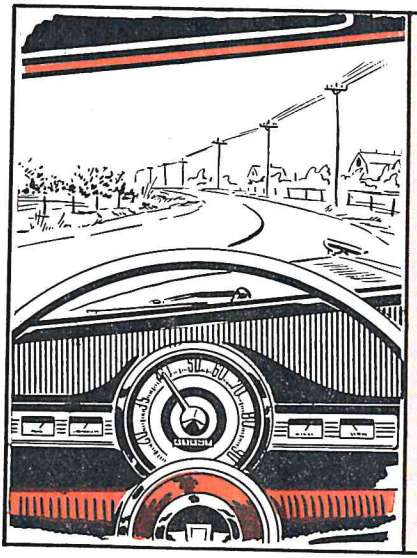
7. On the map, how many miles does $\frac{1}{4}$ inch stand for?

8. How many miles does $\frac{3}{4}$ inch stand for? You can find out by adding the distances for $\frac{1}{2}$ inch and $\frac{1}{4}$ inch.

Pages 290 and 291 are to be used after page 167.

Pages 290 and 291 are to be used after page 167.

Measuring With Speedometers



ten thousands	thousands	hundreds	tens	ones
4	3	8	0	7

A car four years old showed these numbers on its speedometer. How many thousands of miles had this car gone?

The next time you ride in an automobile, watch the **speedometer**. As the automobile moves, you will see the figures on the mileage meter change. These figures show the number of miles you have gone.

Some automobiles have two mileage meters on their speedometers. One shows the total number of miles the automobile has gone. The other is a trip meter. You can set it to show the number of miles on a single trip.

Many cars have only one meter on the speedometer. It shows the total number of miles. Why don't car speedometers have a place for hundreds of thousands of miles?

Pages 292 and 293 are to be used after page 177.

Most speedometers show both miles and parts of miles. All the problems below are about whole miles. You can make up your own problems by watching the speedometer of your own car.

1. Mr. Lane got a new car this spring. At the beginning of a week end, his speedometer showed 4719 miles. The family took a short trip in the car, and at the end of the trip the speedometer read 4824 miles. How many miles did they go?

2. One day, Mr. Lane's speedometer read 7493. Then the family started on a 1500-mile trip. What will the speedometer read when they get back?

3. When Mr. Lane traded in his old car, the speedometer read about 48000 miles. He had driven the car four years. On an average, how many miles a year had he driven?

4. When we started out one morning, our speedometer read 12460. By the end of the day, the speedometer read 12729. How many miles had we driven that day?

5. We drove from our home to the city by one route and came home another way. We used our speedometer to find which way was shorter. It read 41169 when we left home, 41243 when we reached the city, and 41322 when we got home.

a. How many miles was the drive to the city?

b. How many miles was the drive back home?

c. Which route was shorter? How much shorter?

Pages 292 and 293 are to be used after page 177.

Finding Averages

Remember: To find the average of several things, you *add* and then *divide*.

1. On four different days, Ellen's older brother, Dan, practiced running the 100-yard dash, while the track coach timed him. Dan's times for the race were 14 seconds, 15 seconds, 15 seconds, and 12 seconds. What was his average time in this race?

2. You spent 25 cents, 36 cents, 42 cents, 30 cents, and 22 cents for lunches at school one week. What was the average cost of your lunches that week?

3. Last month, you earned $1.33 the first week, 75 cents the second week, a dollar the third, and $1.24 the fourth week. What did your weekly earnings average?

4. The heights of the five first-string players on our school basketball team are 67 inches, 69 inches, 69 inches, 70 inches, and 73 inches. What is their average height?

5. Nora's mother is mailing four books to friends of hers for Christmas presents. Nora weighed the packages for her. They weighed 14 ounces, 13 ounces, 1 pound, and 9 ounces. What was the average weight of the four packages?

6. Tom read the outdoor temperatures at noon every day for a school week. They were 26°, 40°, 35°, 16°, and 9°. What was the average noon temperature?

Pages 294 and 295 are to be used after page 199.

7. Mr. Lane wants to know how many miles a week he drives, on the average. In 5 weeks, he drove 185, 139, 246, 300, and 95 miles. How many miles a week did he drive, on an average?

8. Bill has been practicing his bowling. Last week, in six games he made 42, 65, 84, 95, 76, 64. What was his average score per game?

9. Jim watched television 45 minutes on Monday, 20 minutes on Tuesday, 65 minutes on Wednesday, 30 minutes on Thursday, and 1 hour on Friday. On the average, how many minutes a day did he spend watching television?

10. Tom likes to read about wild animals. In 4 weeks, he read the following numbers of pages in nature books: 32, 41, 25, and 18. How many pages a week did he read, on the average?

11. Allen keeps track of what he spends to take pictures. In 5 weeks, he spent 50¢, 72¢, 50¢, 64¢, and 24¢. On the average, how much a week did he spend on his hobby?

12. Jerry is helping his cousin on a paper route. For the last four weeks, Jerry's share of the earnings has been $1.38, $2.10, $1.64, and $2.28. How much a week does this average?

13. One week, Jill helped her mother the following numbers of minutes: 15, 20, 30, 10, 35, 58. How many minutes a day, on the average, did she help?

Pages 294 and 295 are to be used after page 199.

Questions for 2-Process Problems

See if you can make up questions for the problems on this page. Write the questions on your paper. In front of each question, write the signs showing the two processes you use in the problem. The *second* process is given in each problem below.

For instance, in Problem 1, you see that you must first *add* Bill's four scores. You are to write a question which will use division to finish the problem. So you write "+ ÷" in front of your question.

Write the answer after each question.

1. Bill made the following scores in bowling last week: 60, 80, 72, 56. (Write a question using division.)

2. At the store, Sally bought 3 cans of corn at 19 cents a can, some meat for 78 cents, and some eggs for 62 cents. (Write a question using addition.)

3. We are making a 765-mile trip. The first day we drove 276 miles. Yesterday we drove 309 miles. (Write a question using subtraction.)

4. Mr. Lane's speedometer read 10316 miles when he bought 5 gallons of gasoline. It lasted until the mileage was 10406. (Write a question using division.)

5. Peggy bought 3 pairs of sport socks for 59 cents a pair. She handed the clerk two dollars. (Write a question using subtraction.)

Pages 296 and 297 are to be used after page 203.

Making Your Own Problems

To make up each of these problems, you are to do two things: (1) Think of reasonable numbers to fill the places where numbers are missing. (2) Make up a question to finish the problem.

On your paper, write the missing numbers and your questions. Work each problem and write the answer. Do your problem and answer sound sensible?

1. When we started on a trip, our speedometer read ?. When we got back home, it read ?.

2. Tom went to the store with ? in his pocket. He bought an ice cream cone for ? cents and a toy airplane for ?.

3. Sue made ? pans of cookies. Each pan held ? rows, with ? cookies in each row.

4. Bill got $? for his birthday. He bought a football that he had seen in the store window for $?.

5. For her party, Ellen bought ? quarts of ice cream at ? cents a quart. She spent ? for some cookies.

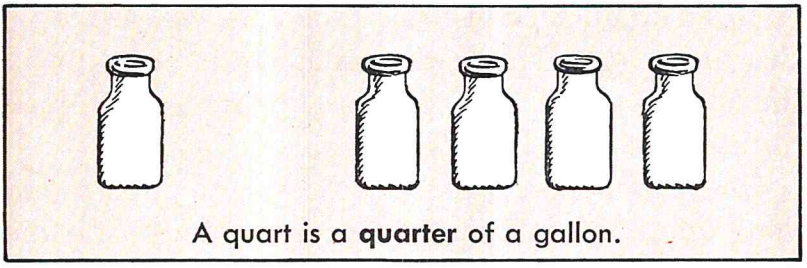
6. In a baseball game, Bill's team scored ? runs and Jerry's team made ? runs.

7. Jim worked for ? hours helping his father one week. His father paid him ? cents an hour. Jim wants to buy a baseball glove costing ?.

8. Jerry had ? United States stamps in his trading book. He put ? more United States stamps in the book. Then he traded ? of them.

Pages 296 and 297 are to be used after page 203.

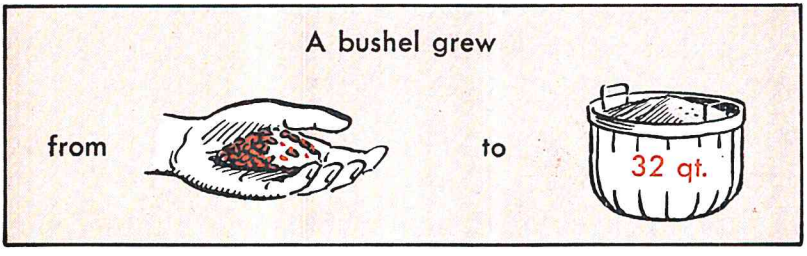
Gallons and Bushels



A quart is a **quarter** of a gallon.

Nobody knows exactly how the **gallon** began. In both England and the United States, it has been used to measure liquids as long as people can remember.

1. A **quart** is simply a "quarter of a gallon." People were too lazy to say all this and just said "quart" for short. A **pint** used to be a little measure for things to drink. Then it was made equal to half a quart. How many pints are there in a gallon?



We don't know exactly how a **bushel** came to be, either. The word used to mean "a hollowed hand," or the amount a person could hold in his hand. It would take a lot of handfuls to make one of our bushels today!

Pages 298 and 299 are to be used after page 205.

Bushels are hard to measure exactly. Big apples or potatoes don't pack in as closely as smaller ones. So nowadays, bushels must also weigh a certain number of pounds. These weights are different in different states. For a few things, the United States Government has set a standard weight per bushel for the whole nation.

For instance, a bushel of shelled corn weighs 56 pounds anywhere in the United States. A bushel of oats weighs 32 pounds.

1. Peggy's father bought 8 bushels of oats for Peggy's pony. How many pounds of oats was this?

2. Does a quart of oats weigh more or less than a pound?

3. What is the difference in weight between a peck of oats and a peck of shelled corn?

4. Bob's father bought a gallon of paint for $5.40. Bob bought 3 quarts of it from his father, to paint his hen house. How much should Bob pay his father?

5. Sue made 2 gallons of cocoa for a school party. If a quart of cocoa serves 5 people, how many people will 2 gallons serve?

6. Mrs. Gray is making coffee for a church supper. She expects 120 people to take coffee. If she makes a pint of coffee for each of these people, how many *quarts* of coffee will she make? How many *gallons* will she make?

Pages 298 and 299 are to be used after page 205.

Using Two-Figure Multiplication

In all but three of these problems, you must multiply with two figures. Read each problem carefully and decide whether you use multiplication or some other process. Then find the answers.

1. Every school day, Joe practices on his trumpet for 25 minutes after he gets home from school. This month there are 23 school days. How many minutes will Joe practice after school this month?

2. Bob keeps a record of the eggs he sells to different customers. When looking over his record book, he found that he had sold 15 dozen eggs to one customer. How many eggs had he sold this customer?

3. Sam and his family are planning a long trip in their car. They plan to drive 18 hours in all on the first two days of their trip. If they average 40 miles an hour, how many miles will they go on these two days?

4. Some of the pupils in Ann's school went on a trip in two buses. There were 38 children in one bus and 45 children in the other bus. How many children went on the trip?

5. Jerry keeps his stamps for trading in a small album. He can get an average of 18 stamps per page in this album. How many trading stamps can he put on 25 pages of his small album?

Pages 300 and 301 are to be used after page 223.

6. Don helped his father load 48 bushels of wheat on their truck. Since a bushel of wheat weighs 60 pounds, how many pounds did they load?

7. A half bushel of apples weighs 24 pounds. If Don carries 17 half-bushel baskets of apples out to the fruit stand, how many pounds has he carried?

8. Nancy wants to practice 45 minutes today. She has already practiced 28 minutes. How many more minutes must she practice?

9. If Mr. Lane gets 19 miles per gallon of gasoline in his car, how many miles will 17 gallons of gasoline take him?

10. Mrs. Lane says her family eats about 11 pounds of meat and cheese a week. Counting 52 weeks in a year, how many pounds a year is this?

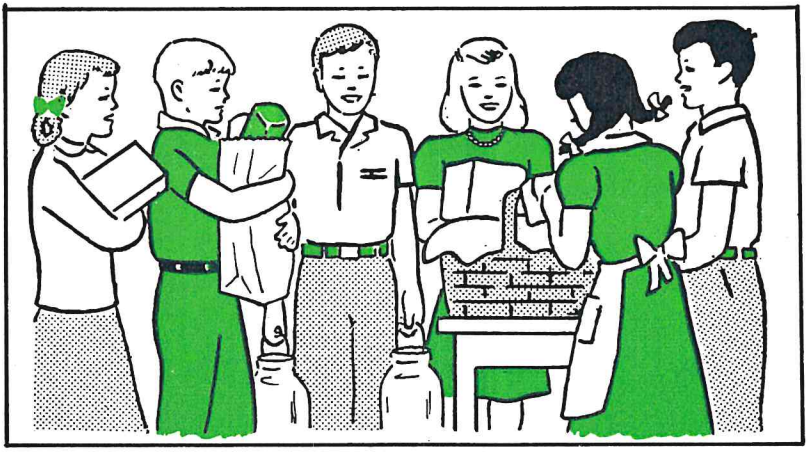
11. In Dan's school, there are 35 children in the fourth grade and 27 children in the third grade. How many more children are there in the fourth grade than there are in the third grade?

12. Sue made 14 boxes of fudge for a school sale. Each box had 24 pieces in it. How many pieces of fudge did Sue make?

13. One day at their road stand, the Grays sold 35 baskets of apples. Bob wondered how many apples they had sold. He found that there were 57 apples in one basket. About how many apples had the Grays sold that day?

Pages 300 and 301 are to be used after page 223.

The Fourth Grade Has a Picnic



Our fourth grade had a picnic at the city park. We decided to buy most of the food for our picnic lunch. A food committee helped our teacher to buy the food. Here are some of the problems which the committee had to solve.

1. For our sandwiches, we bought 9 loaves of sandwich bread at 22 cents a loaf. How much did the sandwich bread cost?

2. We bought 5 pounds of cheese at 69 cents per pound. How much did we pay for the cheese?

3. We also made lemonade. We bought 2 dozen lemons at 65 cents a dozen and 18 cents' worth of sugar. What was the total cost of the lemonade?

4. We bought 4 pounds of cookies at 38 cents a pound. How much did the cookies cost us?

Pages 302 and 303 are to be used after page 225.

5. We bought 7 quarts of ice cream at 69 cents a quart. How much did we have to pay for the ice cream?

6. There were 28 people at the picnic. Into how many slices did we have to cut each of the 7 bricks of ice cream so that each one could have a slice?

7. Each loaf of bread made 10 sandwiches. How many sandwiches did we have from 9 loaves? If each person ate 3, how many sandwiches were left over?

8. Another committee helped find cars to take the 28 of us to the park. Each car could take five of us. How many full cars did we need? How many children would be left over? How many cars did we need in all?

Making Up Two-Step Problems

Make up these problems for the class to solve.

1. Make up a problem about making two kinds of sandwiches for a picnic and how many sandwiches were left. (Use addition and subtraction.)

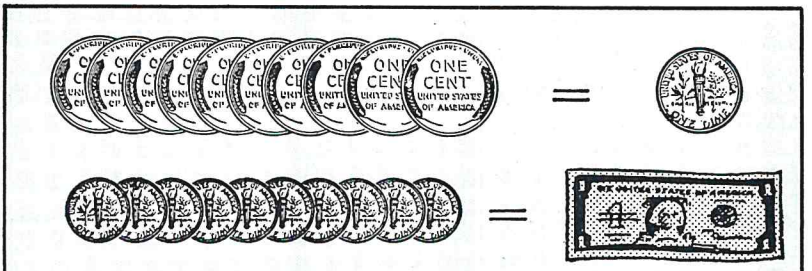
2. Make up a problem about selling glasses of lemonade and how much money you made. (Use multiplication and subtraction.)

3. Make up a problem about finding the average height of five boys on a basketball team. (Use addition and division.)

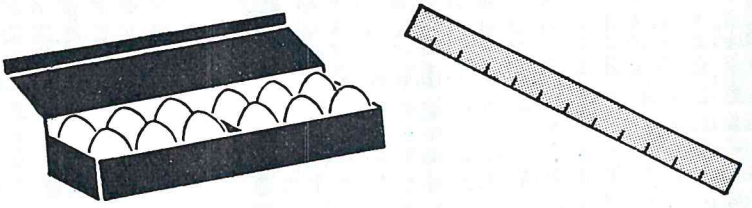
4. Make up a problem about buying 4 pounds of pears and how much change you got. (Use multiplication and subtraction.)

Pages 302 and 303 are to be used after page 225.

Tens and Twelves



A System of 10's



A System of 12's

Some of our measuring systems are based on 10's. Some are based on 12's.

Our number system itself is based on 10's. Ten ones make ten. Ten 10's make 100. Ten hundreds make 1000. A figure in hundreds place is worth 10 times as much as it is in tens place.

Our money system is based on tens, too. Ten pennies make a dime. Ten dimes make a dollar.

On the other hand, we measure many things in 12's. Such things as eggs, rolls, and oranges are usually sold by the dozen.

Pages 304 and 305 are to be used after page 229.

Storekeepers buy some things by the **gross.** A gross is 12 dozen. How many pencils are a gross of pencils?

As you know, there are 12 inches in a foot.

There are 12 months in a year.

Jewelers weigh gold by **troy** weight. How many ounces make a pound by troy weight? (See page 280.)

1. When our money system was started, some people wanted to base it on 12's. Suppose a "dime" were 12 cents, and there were 12 "dimes" in a "dollar." Then how many cents would equal a "dollar"?

2. In this system, how much would equal a "half dollar"? (How many 12-cent "dimes" would make a "half-dollar"?)

3. How much would three such "dollars" equal, in our money?

4. How much would a "nickel" equal, if a dime were 12 cents?

5. Mr. Black, the storekeeper, wants to order half a gross of typewriter ribbons. How many *dozens* should he order?

6. In Problem 5, how many typewriter ribbons will Mr. Black get?

7. Sylvia's baby brother is 20 months old. How many months over a year is this? How many months less than 2 years old is he?

8. There are 24 hours in a day. Is this based on a 10's or 12's system?

Pages 304 and 305 are to be used after page 229.

More About Thousands

1. Sylvia's social studies class is studying about population. The pupils have learned that their city has 378,482 people in it. Its population is ? thousands, ? hundreds, ? tens, ? ones.

2. Five smaller cities near Sylvia's city have the following populations: Allendale, 15,482; Brownville, 7,908; Cranbrook, 18,652; Fayette, 12,307; Myrtle, 9,226. Make a table of these cities, in the order of their size, starting with the largest. Make your table in two columns, under the headings "City" and "Population."

3. Look at your table. The population of Fayette is how much larger than that of Myrtle?

4. How much larger is Allendale than Myrtle?

5. The largest of these five cities is how much bigger than the smallest city?

6. What is the total population of Myrtle and Brownville, that is, the population of both of these cities together?

7. The total population of Myrtle and Brownville is how much greater than the population of Allendale?

8. Recently 82,000 people attended a big football game. Was this more, or less, than the total number of people living in the five cities in your table? How much more or less?

Pages 306 and 307 are to be used after page 234.

Thousands and Millions

1. The city in which Tom lives has a population of 807,419. At the last census, its population was only 699,625. Subtract to find how much the population has increased since the last census was taken?

2. A million is written 1,000,000. There are a thousand thousands in a million. How much less than a million is the population of Tom's city?

3. Half a million is 500,000. How much more than half a million is the population of Tom's city?

4. Since the last census, the population of Tom's state has grown from 7,506,328 to 9,996,453. Can you read these numbers? Start, "Seven million, five hundred six thousand . . . " Can you subtract 7-figure numbers to find how much the state has grown?

5. Tom read in the newspaper that the Community Chest was making a drive for $2,500,000, and that $1,878,520 had already been raised. How much money still needs to be raised?

6. In another part of the paper, Tom read that 998,973 automobiles had already driven on the state turnpike. How many more cars must drive on the turnpike before the number reaches one million?

Find some newspaper stories with large numbers in them. Bring them to school for the rest to see.

Pages 306 and 307 are to be used after page 234.

Arithmetic Names

Here are some names that help you in arithmetic. When you add, subtract, multiply, or divide, the numbers you use have different names. These names will help you tell how you check your work in each process.

You have already used some of these names. Some of them may be new to you. Look at the names of the numbers in the examples, and tell what words are missing in the sentences. In your own words, tell what each arithmetic word means. For instance, an **addend** is one of the numbers you add in an addition example.

ADDITION

79
308
65
7
} Addends

459 ← Sum

1. In this addition example there are four ?. You add down and then check your work by adding up. You should get the same ? both times.

SUBTRACTION

206 ← Minuend
79 ← Subtrahend

127 ← Difference, or Remainder

Check

79
127

206

2. To check subtraction, add the ? and the difference, or ?. If your work is correct, you will get the ?.

Pages 308 and 309 are to be used after page 237.

3. To check your work in multiplication, multiply the **multiplier** by the ?. You should get the same ? both times.

MULTIPLICATION

47 ← Multiplicand
19 ← Multiplier

423 } Partial Products
47 }

893 ← Product

Check

19
47
133
76
893

4. To check your work in division, multiply the quotient by the ? and add the ?, if there is any. Your answer should be the same as the ?.

DIVISION

78 ← Quotient
9)706 ← Dividend
63
76
72
4 ← Remainder
Divisor

Check

78
9
702
4
706

5. Subtract \$3.87 from \$5, and check. What number is the minuend? The subtrahend? The remainder?

6. Divide \$7.25 by 9, and check. In this example, what number is the quotient? The dividend? The divisor? The remainder?

7. Multiply \$.78 by 15, and check. What number is the multiplicand? What number is the multiplier? What are the partial products? What is the product?

8. Add \$4.97, \$10.08, 89¢, \$1.50, and \$3. Check your addition. How many addends are there? What is the sum?

Pages 308 and 309 are to be used after page 237.

Multiplying by Three Figures

$$\begin{array}{r} \$1.20 \\ 341 \\ \hline 120 \\ 480 \\ 360 \\ \hline \$409.20 \end{array}$$

1. Jerry's mother belongs to a club that is giving an entertainment. Tickets to the entertainment cost $1.20 each, and the club members have sold 341 tickets.

Here is how Jerry found how much money his mother's club has taken in.

How much money has the club taken in? Check Jerry's answer by changing the numbers around and multiplying again. Is Jerry's answer correct?

2. Last month, Bob made an average of $1.45 a day with his egg and chicken business. If Bob made this much every day for a year, how much money would he make?

3. Our school cafeteria serves an average of 560 meals every noon. In a school year of 190 days, how many meals are served?

4. The buses for our school go 386 miles every school day to pick up the children and take them home. If we have 190 days of school, how many miles do the buses have to drive in a school year?

5. Sally and her mother studied their grocery bills. They decided they spent an average of $3.73 a day for food for their family. At this rate, how much money for food would they spend in a year?

This page is to be used after page 241.

At the Wild Animal Farm

Last summer, the Lanes spent a day at a "wild animal farm," where lions and tigers and other animals are trained for the circus.

1. The Lanes arrived at the farm at 10:00 a.m. and left at 5 p.m. How many hours were they at the farm?

2. Admission tickets were 50 cents for grownups and 25 cents for children, so Mr. Lane bought 2 of each kind. How much did he pay for all 4 tickets?

3. The children enjoyed watching a woman train Susie, the chimpanzee, to ride a bicycle around a 30-foot track. The first time Susie got only half way around the track before she fell off. The last time she rode 3 times around the track without falling off. How many feet farther did Susie ride the last time than the first time?

4. There were a lot of small monkeys in an enclosed yard. Jean counted 42 monkeys but Tony could count only 39 monkeys. How many more did Jean count?

5. A keeper told the children that the monkeys were for sale. Yesterday they had sold 3 monkeys for $65 each and one monkey for $90. How much did they get for all 4 monkeys? What was the average price per monkey?

6. At 3:25, a man said that the lions would be fed at 4 o'clock. How long did they have to wait?

This page is to be used after page 245.

The Number Facts for Reference

The Addition and Subtraction Facts

	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	10
2	3	4	5	6	7	8	9	10	11
3	4	5	6	7	8	9	10	11	12
4	5	6	7	8	9	10	11	12	13
5	6	7	8	9	10	11	12	13	14
6	7	8	9	10	11	12	13	14	15
7	8	9	10	11	12	13	14	15	16
8	9	10	11	12	13	14	15	16	17
9	10	11	12	13	14	15	16	17	18

The Multiplication and Division Facts

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

Tables of Measures

Measures of Length

12 inches (in.) = 1 foot (ft.)
3 feet (ft.) = 1 yard (yd.)
36 inches = 1 yard

Measures of Time

60 seconds (sec.) = 1 minute (min.)
60 minutes (min.) = 1 hour (hr.)
24 hours (hr.) = 1 day (da.)
7 days (da.) = 1 week (wk.)
12 months (mo.) = 1 year (yr.)
365 days = 1 year
366 days = 1 leap year

Thirty days have September,
April, June, and November.
All the rest have thirty-one
Excepting February alone.

Measures of Weight

16 ounces (oz.) = 1 pound (lb.)
2000 pounds (lb.) = 1 ton (T.)

Liquid Measure

2 cupfuls = 1 pint (pt.)
2 pints (pt.) = 1 quart (qt.)
4 quarts (qt.) = 1 gallon (gal.)

Dry Measure

2 pints (pt.) = 1 quart (qt.)
8 quarts (qt.) = 1 peck (pk.)
4 pecks (pk.) = 1 bushel (bu.)
32 quarts = 1 bushel

INDEX

Abbreviations, 51

Addition
- By endings, 6
- Carrying, 21-23
- Checking, 22, 34
- Column, 5, 7, 22, 23, 31
- Facts, 2, 3, 15
- Of money, 29, 31, 34, 150, 286, 287
- Relation to multiplication, 68, 74, 79, 82
- Relation to subtraction, 2, 15
- Uses of, 8, 9
- With zeros, 20, 168

Average, 96, 97, 198, 199, 276, 277, 294, 295

Calendar, 48, 49, 110, 270, 271

Change, Making, 30, 260, 261

Comparing
- Fractions, 142, 143, 164, 244
- Measures, 77, 111, 281
- Numbers, 19, 232, 233, 305

Copying Numbers, 31, 100, 218

Division
- Bringing down, 186, 187, 196
- Checking, 75, 80, 162, 186, 188
- Facts (2's to 5's), 66, 67, 72
- Facts (6's to 9's), 89-93, 102-105, 116-119, 130, 131
- Of larger numbers, 75, 80, 95, 108, 121, 137, 186, 187, 242
- Of money, 80, 95, 108, 121, 137, 196
- Relation to multiplication, 64-67, 75, 80, 90, 102-105, 107, 116, 117, 130, 131, 133, 162
- Three-figure quotients, 242
- Uses of, 96, 107, 113, 133, 146, 147
- With remainders, 156-161, 170, 173, 178, 182, 184, 185, 188, 288, 289
- With zeros, 75, 189, 253

Enrichment Material, 258-311

Fractions
- Adding, 164, 243
- Comparing, 142, 143, 244
- Equivalent, 243
- Finding part of a group, 44, 70, 91, 105, 117, 131, 135, 140, 235
- Of measures, 71, 76, 77, 122, 123, 140-142, 209, 235, 245, 284, 285
- Problems about, 71, 122, 123, 141-143, 164, 165, 190, 191
- Subtracting, 143, 164, 165, 245

Map, Using a, 167, 290, 291

Meaning
- Of addition, 2, 8, 9
- Of division, 64-67, 70, 107, 133, 146, 147
- Of fractions, 44, 45, 122, 123, 140-143, 164, 165, 243-245
- Of measures, 40-42, 46-50, 76, 77, 179, 204-206, 264-267, 280, 298, 299
- Of multiplication, 64-69, 74, 107, 133, 144, 145
- Of numbers, 15, 18, 19, 31, 61, 78, 99, 127, 187, 193, 216, 217, 229, 234, 255, 304, 305
- Of subtraction, 2, 10-14

Measures
- Abbreviations of, 51
- Changing, 112, 113
- Comparing, 77, 111, 281
- Dry, 204, 205, 298, 299

Measures (continued)
Fractions of, 71, 76, 77, 122, 123, 140-142, 209, 235, 245, 284, 285
Linear, 122, 123, 142, 174, 175, 245, 264, 265
Liquid, 298, 299
Money, 28-30
Problems about, 40, 41, 43, 46, 47, 49, 50, 76, 112, 113, 174, 175, 190, 191, 204, 205, 267
Speedometers, 292, 293
Thermometer, 54
Time, 40, 41, 46-50, 110, 121, 179, 207, 266, 267, 270, 271
Weight, 280, 281

Money, 28-31, 34-37, 78-80, 82-85, 98, 106, 107, 136, 137, 150-153, 196, 210, 214, 215, 226, 227, 241, 260, 261, 286, 287

Multiplication
By two-figure numbers, 220-223, 226-228, 300, 301
By three-figure numbers, 240, 310
Checking, 228, 240
Easier way to multiply, 230, 231
Facts (2's to 5's), 66, 67
Facts (6's to 9's), 88-91, 102-105, 116, 117, 130, 131
Of larger numbers, 74, 79, 82, 83, 94, 136, 220-223, 240, 241
Of money, 79, 83, 151, 226, 227, 241
Relation to addition, 68, 74, 79, 82, 220, 222
Relation to division, 64-67, 75, 80, 90, 102-105, 107, 116, 117, 130, 131, 133, 162
Uses of, 107, 133, 144, 145
With carrying, 82, 83
With zeros, 74, 136, 169, 252

Number System
Place value, 5, 7, 216, 217, 304, 305
System of twelves, 304, 305
Thousands, 18, 19, 234, 258, 259, 306, 307

Problem-Solving Aids
Identifying extra numbers, 56, 57
Making up problems, 32, 33, 37, 148, 149, 211, 219, 262, 263, 278, 296, 297, 303
Selecting correct answers, 55, 101, 118, 119, 214, 215
Selecting right processes, 16, 17, 38, 39, 73, 86, 87, 98, 99, 114, 115, 118, 119, 152, 153, 202, 203, 272, 273
Selecting processes without numbers, 107, 133, 212, 213, 274, 275
Supplying numbers, 33, 148, 149, 219, 262, 263, 278, 297
Supplying questions, 32, 211, 219, 262, 263, 278, 282, 296, 297
Using pictures, 109

Problem Units
A day at the fair, 46, 47
A picnic, 302, 303
Ann's dog, 183
Arithmetic in school, 197
At the wild-animal farm, 311
Bill's bicycle, 166, 167
Can you be the clerk? 260, 261
Cost of lunches, 286, 287
Ellen's birthday party, 163
Jerry's stamps, 114, 115
Lanes' car, 176, 177
Nora's books, 81
Old problems, 283
Our hobby show, 180, 181
Store problems, 152, 153
Tom's trains, 98, 99
Using a timetable, 139
Vacation arithmetic, 1

Problems with one step
About fractions, 71, 122, 123, 142, 143, 164, 165, 190
About measures, 40, 41, 43, 46, 47, 50, 76, 112, 113, 174, 175, 190, 191, 204, 205
Addition only, 8, 9, 287
Addition and subtraction, 16, 17, 32, 33, 36, 37, 55-57, 62, 63, 262, 263
All four processes, 86, 87, 98, 99, 101, 128, 129, 152, 153, 163, 166, 167, 176, 177, 180, 181, 194, 195, 197, 210-215, 224, 225, 246, 247, 256, 274, 275, 302, 303
Division only, 72, 96, 97, 146, 147, 184, 185, 288, 289
Multiplication and division, 73, 84, 85, 92, 93, 106, 107, 112, 113, 118, 119, 132, 133, 148, 149, 272, 273, 278
Multiplication only, 68, 69, 144, 145, 300, 301
"Quickies," 8-11, 16, 33, 43, 68, 69, 72, 73, 76, 86, 87, 92, 93, 106, 107, 112, 113, 118, 119, 132, 133, 144, 145, 148, 149, 197, 246, 247, 288, 289
Subtraction only, 10-14

Problems with two steps
Approach to, 56-59, 124, 125, 129, 154, 155, 200, 201, 282
Two-step problems, 154, 155, 198-203, 238, 239, 248, 249, 294-296, 303

Recall and Maintenance
Cross number puzzles, 279
Cumulative reviews, 15, 31, 42, 91, 94, 95, 100, 105, 108, 117, 120, 121, 134-138, 150, 151, 161, 168, 169, 184, 185, 187, 229, 236, 237, 250-254, 288, 289
Diagnostic check tests, 60-63, 126-129, 192-195, 254-257

Roman Numbers, 52, 53, 268, 269

Ruler, 122, 123, 142, 245

Subtraction
Borrowing, 24, 25, 251
Checking, 26, 27, 35
Facts, 2, 4
Of money, 30, 31, 35
Relation to addition, 2, 15
Uses of, 10-14
With zeros, 20, 25, 168, 251

Tables
Distances, 208
Of measures, 46, 139, 313
Price lists, 36, 286
To visualize number relationships, 2, 66, 90, 104, 116, 130, 157-160, 170, 173, 178, 182, 244, 304

Time, Telling, 40, 41, 46, 47, 121, 245

Vocabulary
Arithmetic words and signs, 64, 66, 95, 137, 187, 308, 309

Zero, 20, 25, 74, 75, 136, 168, 169, 189, 229